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THE LANCET.

No. 4278. Vol. CLXIX. LONDON, SATURDAY, AUGUST 26, 1905. [Pp. 120+32.

CONTENTS.

A LECTURE on the Condition of the Blood Vessels during Shock. Delivered before Post-Graduates at the Samaritan Free Hospital on May 18th, 1905, by JOHN D. MALCOLM, M.B., C.M., F.R.C.S. Edin., Surgeon to the Samaritan Free Hospital.—*(Illustrated)*.. 573

THE CROONIAN LECTURES on the Chemical Correlation of the Functions of the Body. Delivered before the Royal College of Physicians of London on June 20th, 22nd, 27th, & 29th, 1905, by ERNEST HENRY STARLING, M.D. Lond., F.R.S., Fellow of the College; Jodrell Professor of Physiology, University College, London.—Lecture IV..... 579

ORIGINAL ARTICLES.

On Aciduria (Acetonuria) as the Cause of Deaths following the Administration of Chloroform and Ether. By LEONARD G. GUTHRIE, M. D. Oxon., F.R.C.P. Lond., Physician to the Children's Hospital, Paddington-green 583

The "Contracted" Muscles of Infantile Paralysis. By FREDERIC R. FISHER, F.R.C.S. Eng., Surgeon to the National Orthopædic Hospital, &c.—*(Illustrated)* 585

Two Cases of Glanders. By E. W. GOODALL, M.D. Lond., Medical Superintendent, Eastern Fever Hospital, Homerton, N.E. 589

Syphilis of the Third Generation. By C. F. MARSHALL, M.D., B.Sc. Vict., F.R.C.S. Eng., late Assistant Surgeon to the Hospital for Diseases of the Skin, Blackfriars 591

Ruptured Interstitial Pregnancy; Abdominal Hysterectomy; Death. By W. GIFFORD NASH, F.R.C.S. Eng., Senior Surgeon to the Bedford County Hospital. — *(Illustrated)* 592

Notes on Abdominal Surgery Based upon Completed Records of 744 Cases. By E. STANMORE BISHOP, F.R.C.S. Eng., Honorary Surgeon to the Ancoats Hospital, Manchester; Operating Surgeon for Diseases of Women to the Jewish Memorial Hospital, Manchester.—*(Concluded)* ... 593

A Case of Blackwater Fever occurring in the North of Ireland and Treated with Quinine. By ROBERT MOWBRAY, M.D. R.U.I. 599

The Technique of the Examination of Sputum for Tubercle Bacilli Fully Described. By CHARLES GASKELL HIGGINSON, M.A., L.R.C.P. Lond., late Assistant Medical Superintendent, Crooksbury Open-air Sanatorium 600

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

The Use of Turpentine in Renal Hydatids. By E. MACKEY, M.D. Lond., M.R.C.S. Eng., M.R.C.P. Lond., Senior Physician to the Sussex County Hospital, &c. 601

A Note on Three Unusual Midwifery Cases in One Week. By H. H. ROBINSON, M.R.C.S. Eng., L.R.C.P. Lond. 601

A Case of Cæsarean Section. By ALFRED E. ASH, M.D. Vict., M.R.C.S. Eng. 601

REVIEWS AND NOTICES OF BOOKS.

Scientific Reports on the Investigations of the Cancer Research Fund 602

The Diagnosis and Modern Treatment of Pulmonary Consumption, with Special Reference to the Early Recognition and the Permanent Arrest of the Disease. By Arthur C. Latham, M.A., M.D. Oxon., M.A. Cantab., F.R.C.P. Lond. Second Edition 603

The Medical Profession. By M. Foster Reaney, M.B. Lond., M.R.C.S. Eng., D.P.H., I.M.S. 604

Spectroscopy. By E. C. C. Baly, F.I.C. 604

Elementary Experimental Chemistry. By A. E. Dunstan, B.Sc., F.C.S. 604

Veterinary Pathology (Friedberger and Fröhner). Vol. II.: The Non-Infective Diseases of Animals. Translated by Captain Hayes, F.R.C.V.S. Edited by Professor Dunstan, M.R.C.V.S., F.R.S.Edin. 604

Glimpses of the Ages; or the "Superior" and "Inferior" Races, so-called, discussed in the Light of Science and History. By Theophilus E. Samuel Scholes, M.D., &c. ... 604

The Edinburgh Medical Journal 605

The Scottish Medical and Surgical Journal 605

The Medical Chronicle 605

Caledonian Medical Journal..... 605

Medico-Technologisches Journal 605

The Practitioner 605

NEW INVENTIONS.

A Belt for Gastroptosis.—*(Illustrated)* 606

A Tongue Clip for Use in Anæsthesia.—*(Illustrated)* 606

LEADING ARTICLES.

THE REGISTRATION AND INSPECTION OF NURSING HOMES 61

DIFFICULTIES UNDER THE VACCINATION ACTS 611

PHYSICAL STOCK-TAKING 612

LOOKING BACK.
(From THE LANCET, Saturday, August 25, 1827.)

Foreign Department 625

ANNOTATIONS.

Weighing *v.* Measuring as applied to the Dispensing of Medicines 613

The Royal Sanitary Institute ... 613

The Pyelonephritis of Pregnancy 614

Animism and a Medicinal Well.. 615

"Summer Ills" 615

The Sterilisation of Drinking-water for Troops in the Field.. 615

Russian Methods of Quarantine 616

The Physiology of Hiccough..... 616

The Results of Notoriety 617

The Active Constituent of Fool's Parsley 617

The Condition of the Blood-vessels during Shock 618

The Annual Report of the National Society for the Prevention of Cruelty to Children ... 618

Cardiac Massage in Circulatory Failure during Anæsthesia ... 618

Operative Anastomosis of Blood-vessels 619

Children's Country Holidays Fund 619

Alcohol in Sweets..... 619

Flies as Agents in the Spread of Disease 619

The Working of the Inebriates Acts 620

The Examination of Sputum for Tubercle Bacilli..... 620

Public Lavatories 621

THE BRITISH MEDICAL ASSOCIATION.

MEETING AT LEICESTER.

Proceedings in the Sections:

Laryngology, Otology, and Rhinology: Dr. W. Jobson Horne and Dr. S. H. Habershon on the Treatment of Tuberculous Disease of the Larynx; Mr. Harold S. Barwell on the Choice of the Method of Treatment in Cases of Tuberculous Laryngitis; Dr. H. Tilley on the Symptoms, Diagnosis, and Treatment of Chronic Suppuration of the Sphenoidal Sinus; Dr. Watson Williams and Dr. D. S. Davies on What is Notifiable Diphtheria? 606

Tropical Medicine: Lieutenant S. R. Christophers, I.M.S., and Dr. J. W. W. Stephens on a Peculiar Schistosomum Egg; Captain Leonard Rogers, I.M.S., on (1) Blood Counts in Acute Hepatitis and Amœbic Abscess of the Liver and (2) on Snake-bite Successfully Treated by Local Applications of Permanganate of Potassium 609

PUBLIC HEALTH AND POOR LAW.

LOCAL GOVERNMENT BOARD: Reports of Medical Officers of Health..... 626

VITAL STATISTICS:

Health of English Towns 626

Health of Scotch Towns..... 627

Health of Dublin 627

SPECIAL ARTICLES.

The Medical Aspects of National Land Settlements..... 621

The First Congress of Physical Therapeutics at Liége 623

Medicine and the Law 623

Metropolitan Hospital Sunday Fund 624

The Services 627

Homburg: The Problem of Mineral Water Health Resorts.—What Should, and What Does, Determine their Popularity.—Part II. 629

Cholera, Plague, and other Diseases in the Near East 631

The Earthquake in the Punjab.. 632

Birmingham 632

Wales and Western Counties Notes..... 633

Scotland 634

Ireland..... 634

Paris 635

Italy 636

Notes from India 636

CORRESPONDENCE.

Inebriety a Disease and therefore to be Treated by the Medical Profession (Mr. W. McAdam Eccles) 628

Aspiration in Diseases of the Ear and Nose (Dr. Dundas Grant) 628

Midges (Dr. Meredith Young).... 628

The Spa Treatment of Circulatory Disorders (Mr. John Griffiths) 628

Assistant Medical Officers at Darenth Asylum (Mr. Francis R. Barwell, Mr. Gerard A. Herklots, Dr. H. P. Kennard) 629

The Treatment of Medical Men at Harrogate Baths (Mr. J. E. Brooks, J.P.) 639

Railway Companies' Liability ... 640

Medical Witnesses at Coroners' Inquests 640

Premature Baldness 640

"Infamous Conduct"..... 640

OBITUARY.

David McMordie, B.A., M.B. R.U.I. 637

Edward Sharp, M.R.C.S. Eng., L.S.A., J.P..... 637

Deaths of Eminent Foreign Medical Men 637

MEDICAL NEWS.

Russian Railway Medical Congress 605

Foreign University Intelligence 637

Pauper Nursing in Workhouses 637

The Royal Sanitary Institute ... 638

Books, &c., received..... 638

Appointments 638

Vacancies..... 638

Births, Marriages, and Deaths... 639

Notes, Short Comments and Answers to Correspondents ... 639

Medical Diary 641

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX.

MEDICAL AND OTHER BOOKS AND PUBLICATIONS.

COVER.

ADLARD & SON:— Page
Shaw..... Essays on Insanity 1

BAILLIERE, TINDALL & COX:—
Browne & Stevenson.. Squint Occurring in Children 1
Hocles ..... Hernia 1
Finsley .... Descended Testis 1
Minder ..... Diseases of Women 1
Lake & Barwell .. Laryngeal Phthisis 1
Owen..... Cleft-Palate, &c..... 1
Sewill ..... Dental Surgery 1
Shaw-Mackenzie. Inoperable Cancer 1

BALE, SONS & DANIELSSON:—
Moullin .... Inflammation of the Appendix 1
" .... Treatment of Gastric Ulcer..... 1

CASSELL & CO.:—
Owen..... Surgical Diseases of Children 1

CHURCHILL, J. & A.:—
Medical Directory for 1905 1

DAVIDSON & CO.:—
Grant ..... Study of Laryngoscopy 1

ILIFFE & SONS:—
White ..... Treatment of Running Ears 1

LEWIS:— Page
Campbell, H. Fleshing, &c. 1
" Headache 1
" The Rest Cure 1
Martindale & Westcott .. Extra Pharmacopœia .. 1
Moullin .... Enlargement of the Prostate 1
" .... Inflammation of the Bladder..... 1
Roth ..... Curvature of the Spine 1

MACMILLAN & CO.:—
Tubby & Jones .... Surgery of Paralysis.... 1

MEDICAL PUBLISHING CO.:—
Lane ..... Chronic Constipation .. 1

PENTLAND, Y. J.:—
Thomson & Miles ..... Manual of Surgery 1

SAUNDERS & CO.:—
Saunders' Medical Hand-Atlases..... 1

BAILLIERE, TINDALL & COX:—
Bidwell .... Intestinal Surgery..... 7
Bigg ..... Constipation 7

BALE, SONS & DANIELSSON:—
British Gynæcological Journal 8

CHURCHILL, J. & A.:—
Cripps ..... Ovariotomy, &c. 6
Harrison.... Stone, Prostate, &c. 7

CHURCHILL—(Continued). Page
Snow..... Treatise on Cancers 7
" ..... Portable Massage 7

CORNISH BROS. (BIRMINGHAM):—
Sawyer, Sir J. Practical Medicine 6
" Insomnia, &c. 6

KEGAN PAUL & CO.:—
Taylor ..... Diseases of the Eye 6

LEWIS:—
Martindale & Westcott .. Extra Pharmacopœia .. 5

MACLEHOSE & SONS (GLASGOW):—
Anderson.... Use of Tuberculin..... 6

MACMILLAN & CO.:—
Lockwood .. The Surgery of Appendicitis 6

PENTLAND, Y. J.:—
Lockwood .. Ampute Surgery..... 6
" .. Cure of Hernia, &c. 6

REBMAN:—
Elliot ..... Radiotherapy and its Application to Skin Diseases 5
Klepetsch & Kowarsky. Clinical Chemistry and Microscopy..... 5

RENSHAW:—
Wood ..... Application of Trusses 6

SAUNDERS & CO.:— Page
Abdominal Hernias 3
Bacteriology 3
Ear and Diseases of the Eye 2
Fractures and Dislocations 3
General Pathology Histology 3
Gynæcology 3
Hash ..... Operative Ophthalmology 3
Human Histology 3
Insanity Medicine & Diagnosis 3
Labour & Operative Obstetrics 3
Larynx 3
Legal Medicine..... 3
Medical Hand-Atlases 3
Mouth Pharynx, and Nose 3
Nervous System 3
Obstetric Diagnosis & Treatment 3
Operative Gynæcology 3
Operative Surgery 3
Ophthalmoscopy 3
Otology 3
Special Pathologic Histology 3
Syphilis & Venereal Diseases..... 3

SMITH, ELDER & CO.:—
Keetley .... Orthopædic Surgery.... 6
" .... Gastric Ulcers..... 6
" .... Cœliparhood Practice 6
Lawson ..... Diseases and Injuries of the Eye..... 6
Tirard ..... Albuminuria, &c. 6

MEDICAL LIBRARIES, &c.:—
Schatz—Stammering 7
The Fishing Gazette..... 7

OFFICIAL AND GENERAL ANNOUNCEMENTS.

APPOINTMENTS VACANT:—
Addenbrooke's Hospital, Cambridge 70
Ancoats Hospital, Manchester 70
Berkshire Asylum, Wallingford..... 71
Bolingbroke Hospital, Wandsworth Common 70
Brighton Throat and Ear Hospital .. 71
Bristol Eye Hospital 70
Car 16 Infirmary 70
County Borough of Tynemouth 69
County Lunatic Asylum, Lancaster .. 70
Coventry and Warwickshire Hospital 71
Cumberland Infirmary, Carlisle 70
Dumfries and Galloway Royal Infirmary 69
East London Hospital for Children, Shadwell..... 71
General Hospital at Wolverhampton .. 69
Great Northern Central Hospital 71
Hampstead General Hospital 70
Hospital for Epilepsy and Paralysis, Maida Vale 71
Hospital for Sick Children, Newcastle-on-Tyne 70
Kasr el-Ainy Hospital, Cairo 71
Leicester Infirmary 70
Liverpool Stanley Hospital 70
Manchester Children's Hospitals 69, 70
Metropolitan Asylums Board 70
Metropolitan Water Board 69
Municipality of the Town of Singapore 69
Noble's Isle of Man Hospital and Dispensary 69
Parish of St. Marylebone 71
Prudhams House Asylum 71
Radcliffe Infirmary, Oxford 69
Ramsgate General Hospital 70
Royal United Hospital, Bath 71
Sheffield Royal Hospital..... 70
Stamford hire General Infirmary 70
Stockport Infirmary 69
University College, London 71
University of Melbourne 70
West London Hospital, Hammersmith 69

ASSISTANCIES, MEDICAL 77

ASYLUMS, HOMES, &c.:—
Ashwood House, Kingswinford 60
Barnwood House Hospital..... 61
Bedford House, Brighton 60
Bishopstone House, Bedford 6
Bodorgan Manor, Bournemouth 60
Buntingford House Retreat, Herts .. 60
Camberwell House, Peckham-road .. 60
Capel Lodge, near Folkestone 60
Clarence Lodge, Clapham-park 60
Coppice, The, Nottingham..... 61
Coronation Home, Hove..... 60
Cotswold Sanatorium 60
Cresgh, Fulham 60
Crooksbury Sanatorium, Surrey..... 60
Dalrymple House, Rickmansworth .. 60
Dartmoor Sanatorium 64
David Lewis Colony, Alderley Edge.. 67
Denton Johns' Sanatorium, Parkstone 64
Doctor, Sexhill-on-Sea 60
Dorchester Asylum 60
Dr. Readleigh's Sanatorium, Darkmoor 60
Dunstone Park Sanatorium, Paignton 60
East Anglian Sanatorium, Nayland .. 60
Fernesfield, Ashford 60
Fairford Retreat, Gloucestershire.... 60
Ferguson, Barnet 6
Flower House, Catford 61
Grove House, Church Stretton 61
Grove, The, Catton, Norwich 6
Hailey Open Air Sanatorium, Ipsden 62

ASYLUMS—(Continued). Page
Haydock Lodge, Newton-le-Willows 62
Hesham Hall Norwich 60
High Shot House, Twickenham 60
Hitch, Mrs., Hollington 61
Home of Good Hope, Bournemouth .. 60
Home Sanatorium, Bournemouth 61
K., Westminster 60
Laverstock Lodge Retreat, Colinsburgh 62
Lady Superintendent, Brighton 60
Lady Superintendent, Streatham 60
Lawson, Nordrach-on-Dee, Banchory 61
London Fever Hospital 60
London Open - Air Sanatorium, Wokingham 60
Lufta'ar sanatorium 60
Maternity Home, New King's-road .. 60
Melbourne House, Leicester..... 61
Merivale Sanatorium, Ranelagh..... 60
Moat House, Tamworth 61
Moorcote Open - Air Sanatorium, Eversley 64
Nordrach in Wales 60
Nordrach-upon-Mendip Sanatorium.. 60
Northlands Retreat, Wandsworth 60
Northumberland House, Finsbury-park 62
Northwood Sanatorium 62
Norwood Sanatorium 60
No. 230, L.G., Strand..... 60
No. 245, L.G., Strand..... 60
No. 265, L.G., Strand..... 60
No. 276, L.G., Strand..... 60
No. 289, L.G., Strand..... 60
No. 1011, L.G., Strand 67
Nurse C., Clapham-park 60
Odell Hills Sanatorium, Kinross-shire 60
Overdale, Whitefield..... 61
Painswick Sanatorium..... 62
Park House Convalescent, &c., Home, Waterloo..... 62
Pine-yr-Dinas, Merionethshire 62
Plympton House, South Devon 61
Redgwick Sanatorium, Sussex 60
Shaftesbury House, Formby 62
Slater, Shefford 60
Springfield House Private Asylum, Bedford 60
St. Andrew's Hospital, Northampton 61
St. Luke's Hospital, E.C. 61
Stocker, Craven-street..... 60
Stone House, Canterbury 61
Stretton House, Church Stretton 61
Sunshine, Chislehurst 62
Tallerman Treatment Institute 60
Thunderclifte Grange, nr. Rotherham 61
Towne House, Leicester 61
Truman, Hanbury-street 60
Vale of Clwyd Sanatorium..... 60
Warneford Asylum, Oxford 62
West Malling-place, Kent 62
Wonford House, Exeter 61
Wye House, Buxton 61
Wyke House, Isleworth 61
Yarrow Convalescent Home, Broadstairs 62

COMPANIONS:—
No. 309, L.O., Strand..... 77
No. 3 S, L.O., Strand..... 77

FINANCIAL, &c.:—
St Kitts Bank..... 60
Equitable Reversionary Interest Soc. 63

HEALTH RESORTS, BATHS, &c.:—
Aberystwith, the Biarritz of Wales .. 67
Baths of Schinznach 6
Hydro, Caversham..... 64

HEALTH RESORTS—(Continued). Page
Matlock Bath 66
Moffat Hydropathic 67
Needles, Matlock 67
South Devon Health and Holiday Resort, Bishop's Teignton 67
Woodhall Spa Baths 66

HOMES, &c., WANTED:—
A. B., Oxford-street 63
Box 533, Queen Victoria-street 63

HOTELS:—
Barton Court Hotel, New Milton 62
Ilfracombe Hotel 62
Kissingen—Hotel de Russie 62
Montreux Hotel and Chateau, Belmont 62

HOUSE & ESTATE AGENTS:—
Brackett & Sons, Tunbridge Wells .. 75
Dalhousie, Heathfield 75
Elliott, Son & Boyton, Vere-street.... 75
G. R., Brighton 75
Hankinson & Co., Southsea 75
Richardson, New Malden 75
T., Clapham-park 75
1, Marina road, Dunham 75
Consulting-rooms 75
Signed & Co., Wimpole-street 75
5, Hertford-street, Mayfair 75

LIFE & FIRE ASSURANCES:—
Prudential 69

MEDICAL ACCOUNTANTS, &c.:—
Turner 76

MEDICAL AGENTS:—
Dr. Field Hall 71
Lee & Martin 75
London Medical Agency 75
Manchester Medical Agency 71
Manchester Medical, &c., Association 74
Medical Agency 75
Moore 74
Needes, Herbert 75
Needes, J. C. 74
Orridge 75
Peacock & Hadley 74
Professional Agency 75
Reynolds & Branson 74
Scholastic, Clerical, &c., Assoc. 72
Southern Medical Agency 75
Turner 75
Wilson & Son 74

MEDICAL SCHOOLS (LONDON):—
Charing Cross Hos. Medical School .. 54
Cocks's School of Anatomy 5
Guy's Hospital Medical School 52
London Hospital Medical College 53
London (Royal Free Hospital) School of Medicine for Women 54
London School of Tropical Medicine 54
Medical Graduates' College, &c. 54
Middlesex Hospital Medical School .. 55
St. Bartholomew's Hos. & College .. 54
St. George's Hospital Medical School 52
St. Mary's Hospital Medical School .. 53
St. Thomas's Hospital 53
University College, London 52
West London Post-Graduate College . 54
Westminster Hosp. Medical School... 55

MEDICAL SCHOOLS (PROVINCIAL):—
Anderson's College Medical School, Glasgow 66
Queen's College, Cork 55
St. Mungo's College, Glasgow 55

MEDICAL SCHOOLS—(Continued). Page
University College, Bristol 56
University of Birmingham 56
University of Durham College of Medicine 55
University of Liverpool 56
Victoria University of Manchester .. 56

NURSING INSTITUTES:—
General Nursing Association 69
Hos. for Sick Children, Gt. Ormond-st. 69
London Nurses' Association 69
Male and Female Nurses' Assoc. 69
Male Nurses' Association 69
Male Nurses' Co-operative 69
Middlesex Hos. Trained Nurses' Inst 68
Nurses' Co-operation, Portland-place 69
Queen Charlotte's Lying-in Hos. 69
St. John's House 69
Temperance Male and Female Nurses' Co-operation 69
Temperance Male Nurses' Co-operation 69
Temperance Provident Society 69
York-road General Lying-in Hospital, Lambeth 69

OFFICIAL NOTICES:—
Colleges of Preceptors 57
King's College Hospital 57
Lister Institute of Preventive Medicine 56
London Hospital Medical College.. 54, 56
London Post-Graduate Association .. 56
London Throat Hospital..... 57
Mr. & Mrs. F. D. Mwalla, deceased.— Next-of-kin about Claim 57
Pathological Laboratories, Langham-place 64
Royal Naval Medical Examination .. 53
St. Bartholomew's Hos. and College .. 53
University of Cambridge..... 57

PARTNERSHIPS & PRACTICES:—
London Medical Agency, Strand..... 75
Manchester Medical Association..... 76
No. 313, L.O., Strand..... 76
No. 339, L.O., Strand..... 76
No. 341, L.O., Strand..... 76
No. 373, L.O., Strand..... 76
No. 375, L.O., Strand..... 76
No. 377, L.O., Strand..... 76
No. 381, L.O., Strand..... 76
No. 383, L.O., Strand..... 76
No. 385, L.O., Strand..... 76
No. 387, L.O., Strand..... 76
No. 389, L.O., Strand..... 76
No. 391, L.O., Strand..... 76
No. 393, L.O., Strand..... 76
No. 395, L.O., Strand..... 76

RAILWAY & STEAMSHIP CO.'S:—
Booth S.S. Co.'s Tours 66
Great Western Railway Co.— Liege Exhibition 66
New Zealand Shipping Co..... 66
Royal Mail Steam Packet Co.—Tours 66

SCHOOLS, PREPARATORY, &c.:—
Manchester Physical Training College 57

TUTORS & LECTURERS:—
Fellowship 58
Gemmell 58
Gooch 57, 58
Korte 58
Med. Graduates' College, &c.. 53
No. 310, L.O. .. 58
No. 331, L.O. .. 58
Patterson 58
Van Praagh..... 58
Weymouth 58

(For Index to Trade and Miscellaneous Advertisements see page 4).

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INDEX—(CONTINUED).

TRADE AND MISCELLANEOUS ADVERTISEMENTS.

COVER.

PAGE

CHEMISTS & DRUGGISTS:—
Semper's Food, Ltd.—
Liquor Pancreaticus ... iv
Peptonising Powders ... iv
McKesson & Robbins—
British Pharmacopœia Pills ... iii

FOODS:—
Wulfard & Sons—
Sanitary Milk Supply ... ii

WATCHMAKERS, &c.:—
Smith & Sons, Ltd.—
Doctor's Watch ... iii
Strand Half Chronometer ... iii

AMBULANCES:—
St. John Ambulance—
Invalid Carriages ... i

BOTTLE MERCHANTS:—
Isaac ... ii
Islington Glass Bottle Company ... ii
Kilner Brothers, Ltd. ... i

CARRIAGES, MOTORS, &c.:—
Argyll Motors, Ltd.—
Argyll Motor Car ... i
Armstrong—
Coachmen's and Grooms' Liveries ... i
Mayhews & Son—
Single Brougham ... i
Zenith Motor Engineering Co.—
Zenith Motor Car ... i
" Rims ... i
W. George-street, Portman-square—
Secondhand Carriages ... i

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Castor Oil ... iii
Antitoxins ... iii
Hydin Amara ... ii
Malted Iusi ... ii
Bailie & Co.—
Bromidia ... iii
Brin's Oxygen Co.—Brin's Oxygen ... ii
Bullock & Co.—
Pepsina Porci ... ii
Acid Glycerine of Pepsine ... ii
Burgoyne, Burbidges & Co.—
Acetyl Salicylic Acid ... ii
Burroughs, Wellcome & Co.—
Tabloid and Soloid Trade Marks ... ii
Hæmatine Products ... iii

CHEMISTS—(Continued).
Candol Depôt—Candol ... i
Christy & Co.—
Pyrocapol ... ii
Pyrocreoline ... ii
Glyco-Thymoline ... iii
Diuogen ... iii
Crosse & Sons—
Mowbray's Iodinated Wine ... iii
" Syrup ... iii
Cinchylate of Sodium (Ulin) ... iii
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A Lecture
ON
THE CONDITION OF THE BLOOD VESSELS DURING SHOCK.

Delivered before Post-Graduates at the Samaritan Free Hospital on May 18th, 1905,

BY JOHN D. MALCOLM, M.B., C.M., F.R.C.S. EDIN.,
SURGEON TO THE SAMARITAN FREE HOSPITAL.

GENTLEMEN,—One of the chief objects of scientific investigation is to ascertain the extent to which theories agree with facts and it is only when a theory can be made to fit in with all the circumstances under consideration that it may be regarded as a part of our knowledge of the subject concerned.

As I hold views on the condition of the vessels during shock which are not those usually taught, but which seem to me to fit in exactly with clinical and experimental facts, I have read with great care the Hunterian lectures on this subject recently delivered by Mr. J. P. Lockhart Mummery.[1] These lectures are important as embodying the opinions of one whose position as a Hunterian professor stamps his work with authority and as an exposition of the most up-to-date and generally accepted views on the nature of shock, but they interest me more particularly because the evidence brought forward seems in several respects to have landed the lecturer in obvious difficulties in bringing theories and facts into line.

After some years of careful study of cases of abdominal surgery I came to the conclusion that there was not sufficient evidence to warrant an acceptance of the theory then in vogue that shock was caused by a relaxation of the vessels in the splanchnic area. I formulated the view, which I incidentally published in 1893,[2] that a contraction of the arteries generally, and especially of the superficial arteries, occurs during shock and that, in so far as an unusual amount of blood may be found in the splanchnic area as a result of shock, the excess is forced rather than drawn into the central parts of the body. According to this view shock is associated with an exaggeration of changes which are known to occur as a consequence of every injury and it seems to me that the state of the vessels during shock may be explained by this theory better than by any other. The most popular theory at present, however, would appear to be that the essential factor in the production of the condition of shock is a fall of blood pressure, not in the splanchnic area alone but throughout the body, and that this fall of blood pressure is brought about by a relaxation of the whole vascular system. This theory is, I think, founded chiefly on Dr. G. W. Crile's experiments.[3] On the other hand, many years ago it was shown by M. Bernard that division of the sympathetic nerves in the neck of a cat was followed by turgescence of the blood vessels of the ear and by increased heat of that part and of the whole side of the face.[4] This was due to a release of the vessels from the control of the central nervous system. It might be held, however, that the congested state of the vessels and the rise of superficial temperature observed in a small portion of the body would not be obvious if the whole of the vascular system was affected; but in blushing all the face and neck may show a marked dilatation of the capillaries, which, I think, can only arise if the arterioles are relaxed. Again, in the flushes which women so often suffer from at the change of life, in severe cases, an intense burning sensation is felt all over the body, showing that the whole surface is affected. Moreover, on dividing the roots of the nerves, where they leave the cord, Lister found that the flow of blood in the web of a frog's foot became very full and free, the vessels being released from the influence of the vaso-motor centres.[5] Hence if the vaso-motor centre is exhausted in shock some explanation is required of the fact that the whole surface of the body is not suffused with blood in that condition. The theory that the vessels are relaxed gives rise also to the obvious criticism that during shock, if the theory holds good, all the minute vessels should be enlarged and the slightest incision should bring about free hæmorrhage. This does not occur. On the contrary when the surgeon finds that there is very little hæmorrhage on cutting tissues after a severe operation has been in progress for some time, he should immediately inquire into the general condition of his patient, whereas if bleeding is moderately free from the smaller vessels he may be quite certain that his patient is not in a state of dangerous shock. By observing this point alone the operator may obtain a very fair estimate of the general condition of his patient, although a comparatively bloodless state of the parts does not always indicate extreme danger.

The appearance of a patient or of a wound made on a patient in a state of shock is certainly suggestive of a constriction of the vessels rather than of a dilatation, and if a patient is in a state of extreme shock there are few commoner ways of expressing the opinion that an improvement has taken place than by remarking that the blood is coming back into the lips. This is a clinical view of the matter, but I believe it expresses a physiological fact. The theory that shock was due to a relaxation of the splanchnic area, which was founded on Goltz's observation of the effects of tapping the mesentery of a suspended frog, accounted fully for the bloodless appearance of the skin in this condition. Blanching of the skin is also easily understood as a result of hæmorrhage. But a very severe degree of shock may certainly be brought about without any hæmorrhage at all, or by abdominal operations without any dilatation of subperitoneal vessels being obvious and without serious loss of blood. Moreover, it does not follow because blood flows into the vessels of the splanchnic area when these are dilated that a dilatation of these vessels is the only possible cause of the distribution of the bulk of the blood which is found in cases of severe shock. It seems to me that exactly the same distribution of the blood and also a fall of blood pressure in the systemic arteries with a corresponding rise in the splanchnic area, may be brought about if an extreme contraction of the arterial system and especially of the superficial vessels occurs, whereby the blood is forced into the tissues or into the central parts of the body; and without questioning the accuracy of any of the statements of fact made by Mr. Mummery and by Dr. Crile I hope to show that the evidence brought forward by them lends support to my view of the subject rather than to the theory that the vessels are dilated in shock.

It seems to be assumed by Dr. Crile and by Mr. Mummery that a fall of blood pressure necessarily indicates that there is a relaxation of arterial tension. Dr. Crile wrote that "in shock the essential phenomenon is a diminution of the blood pressure" and that the cause of this fall of pressure "must be an exhaustion of the cardiac muscle, of the cardiac centres, of the blood vessels, or of the vaso-motor centres."[6] After giving reasons for eliminating the first three, he concluded that the cause of the fall was "an exhaustion or break-down of the vaso-motor centre."[7] Dr. Crile's views were founded on the results of experiments on the blood pressure estimated chiefly in the carotid arteries of dogs. Mr. Mummery has studied this subject clinically, using the Riva-Rocci sphygmomanometer for estimating the blood pressure. This instrument consists of an inflatable rubber armlet which is fitted above the elbow. There is a manometer attached by which the pressure necessary to obliterate the pulse at the wrist by inflating the armlet is measured. This pressure is said to indicate "the maximum systolic pressure."[8] With this instrument at first a rise in blood pressure in the radial artery was detected after an injury and later a fall. It was said that[9] "the first effect of almost any traumatism is to produce a rise in blood pressure." And again Mr. Mummery wrote[10]: "I have several times noticed that when a severe operation has been going on for some time and the first signs of shock have shown themselves by a fall in the blood pressure, injury to a nerve from traction on it or from cutting it, or stimulation from enlarging the incision, has produced not a rise in the blood pressure as is usually the case, but a definite and sudden fall to a lower level, showing

[1] THE LANCET, March 18th (p. 695) and 25th (p. 776), and April 1st (p. 846), 1905.
[2] Physiology of Death from Traumatic Fever, pp. 22 et seq. (J. and A. Churchill).
[3] Blood Pressure in Surgery, 1903; Surgical Shock, 1899.
[4] Lister: Philosophical Transactions, vol. cxlviii., p. 607.
[5] Ibid., pp. 610 et seq.
[6] Blood Pressure in Surgery, p. 401.
[7] Ibid., p. 403.
[8] THE LANCET, March 18th, 1905, p. 697.
[9] Ibid., p. 699.
[10] Ibid., p. 700.

that a depressor effect alone has been produced." The view that a fall of blood pressure affords complete evidence of a relaxation of the vascular system is, however, open to question.

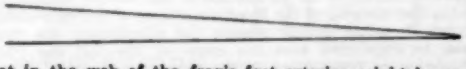
THE BLOOD PRESSURE IN MEDIUM-SIZED VESSELS.

The alterations of pressure in fluids flowing through tubes of varying sizes, such as those constituting the arterial system, give rise to extremely complex questions of dynamics and it seems to me that in certain conditions which occur every day a fall of blood pressure in arteries is associated with a contraction of their muscular walls. The arteries consist of a series of tubes beginning with the aorta and, after numerous subdivisions, ending in minute ramifications distributed to all parts of the body. They have a well-marked muscular coat, the power of which is proportionally greater in the smaller vessels, whilst in the aorta there are few, if any, muscle fibres, these being replaced by elastic tissue. In the larger vessels also the proportion of elastic tissue is considerable.

All observers are agreed that a contraction of the small arteries and a rise of arterial blood pressure in the main vessels are constant effects of a moderate stimulation of sensory nerves. It does not follow, however, that a fall of blood pressure in any particular vessel must necessarily be due to a relaxed condition of the arteries. The amount of force exerted by the muscular wall of the artery has no relationship to the intravascular pressure, such as it would have if the distribution of the blood was unalterable. Contraction of an artery can only raise the intravascular pressure directly if it meets with resistance. In a closed vessel, such as a force-pump with its outlet stopped, when the piston is pressed home, of course, the pressure is raised within the cylinder. In the arteries of the human body the effects of contraction are quite different.

In considering this question the following facts must be kept in view—namely, that, other things being equal, the pressure in tubes conveying fluids increases with the size of the tube and therefore when the arterioles or small arteries contract forcibly the blood pressure within them is reduced. "The resistance in narrow tubes increases more rapidly than the diameter of the tube decreases, as has been proved experimentally,"[11] and "within the wide parts of the tube the pressure is greater than the sum of the resistances still to be overcome, whilst in the narrow portions it is less than these."[12] Hence increased resistance to the blood flow in a vessel and increased pressure of blood within the same vessel do not occur together but in an inverse ratio to each other, and therefore *the contraction of an artery increases the resistance to the blood flow within it but diminishes the blood pressure within it.* Some sort of circulation must go on in the parts essential to life as long as life continues but theoretically the blood pressure may be completely removed in the smaller vessels. In the paper on the parts of the nervous system regulating the contractions of the arteries, from which I have already quoted, it was shown

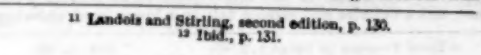
FIG. 1.



that in the web of the frog's foot arteries might be contracted "to absolute closure" by nervous influences. Variations of calibre in the vessels are common but the whole of a vessel does not necessarily or usually contract or relax at once. If contraction takes place it begins in the arterioles and gradually extends to larger vessels and relaxation takes place by an inverse order of procedure.

If Fig. 1 is taken as a diagrammatic representation of a vessel extending from the heart on the left to the arterioles on the right it is obvious that if the arterioles and small

FIG. 2.



vessels contract the resistance in them will be increased and the larger parts of the artery will therefore tend to be dilated. The condition produced may therefore be represented somewhat as in Fig. 2. In this condition the blood pressure in the medium sized and large arteries will be increased on account of the greater resistance to the blood flow in the arterioles and on account of the larger diameter of the vessels themselves. The pulse at the wrist will be full and easily felt if the constriction has not advanced to the radial arteries. The blood pressure in the arterioles will be diminished. If there is a still further stimulation of vascular contraction and if arteries of the size of the radial become constricted the pressure within them also will be reduced and the condition would be represented diagrammatically as in Fig. 3. In this state the pulse at the

FIG. 3.

wrist would be small and might be impalpable and, *if no other change took place*, the pressure would be still further increased in the largest vessels and so the process might go on until all the contraction possible had been brought about. The contraction of a small artery does not, however, by any means represent the whole power that is brought to bear to raise the blood pressure in the large vessels. "The sectional area of all the branches of the aorta becomes greater as we proceed from the aorta towards the capillaries, so that the capillary area is 700 times greater than the sectional area of the aorta (Vierordt)."[13] As the muscular power of the small vessels is comparatively greater than that of the large arteries and as the resistance in small vessels increases more quickly as they diminish in calibre, the power with which the blood is held back is very great when the arterioles contract. That the radials may actively contract to the extent necessary to make them impalpable is certain, because the blood vascular system must always be full, and if the pulse at the wrist disappears from loss of blood the artery must contract on what remains. Moreover, the arteries are often found contracted and empty after death and this is attributed to an active change, an extreme contraction brought about reflexly by the venosity of the blood.[14]

From a consideration of all these conditions it would appear that if a fall of blood pressure in the brachial or radial artery is found in any particular circumstances it may be altogether misleading to conclude from this fact that the blood vessels are relaxed. Yet the whole argument throughout all the literature of this subject with which I am acquainted seems to be founded on the supposition that a fall of blood pressure proves that there is a relaxation of the arterial tension and that a rise of blood pressure indicates an arterial contraction.

BLOOD PRESSURE IN THE CAROTIDS.

It might be thought that the fall of blood pressure in the carotid artery, which Dr. Crile has found whenever he tested this matter, if a state of extreme shock was approaching, could not be produced by the process which I have indicated unless a decrease of cardiac power was brought about at the same time as the contraction of the vessels. But, as Dr. Crile has shown, the evidence of a decrease of cardiac power is wanting. On the contrary, the heart seems to be stimulated to greater and effective exertions and if it cannot keep up the pressure sudden death from heart failure may take place. A fall of blood pressure in the carotids may be explained, however, on the assumption that there is an intense general contraction of the systemic arteries and that the cardiac force is fully maintained.

I shall refer later to evidence that the actual quantity of blood in the vessels is diminished during shock and this is an important factor in reducing the intravascular pressure, but at present I would point out that during the state of shock there is an increased flow of blood to the internal and warmer parts. If the patient dies the circulation continues efficient in the central longer than in the superficial vascular areas. Assuming that a contraction of the superficial vessels occurs and is somewhat more powerful than that of the internal vessels the blood, if it is not destroyed, must be directed to the centre of the body and a greater contraction of the superficial vessels may quite well be accounted for by the effects of the external temperature and by the physiological changes produced by the necessity for conserving heat in the state of shock. It is, indeed, possible that the portal system and the central areas generally relax at the same time that the superficial vessels contract, but there does not

[11] Landois and Stirling, second edition, p. 130.
[12] Ibid., p. 131.
[13] Ibid., p. 185.
[14] Ibid., p. 962.

seem to be any evidence that the arterioles relax anywhere in the condition of shock.

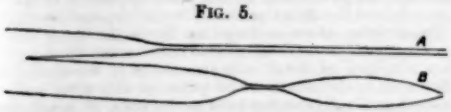
The distribution of the blood may be compared to the diverting of a flow of water from one channel to another. When the water is shut off from a mill leat by closing the sluice gates the pressure past the mill wheel and on the sides of the leat is first reduced and then may be removed altogether. The same would happen if the leat were filled up or if it could contract from the wheel to its gates like an artery. At the same time that the flow through the leat is diminished the flow and pressure of water over the weir are increased. The same effect as regards the distribution of water would of course be produced by removing the weir.

Mr. Mummery, on the authority of Dr. Crile, stated[15] that along with a reduction of pressure in the carotids there is a rise of pressure in the portal vessels when a state of shock is induced. He also pointed out that a see-saw alternation of pressure between the splanchnic and the systemic vascular areas is a normal, physiological, everyday occurrence.[16] He wrote that "the ingestion of food causes a marked alteration in general blood pressure. A rise in pressure first occurs after a meal to be followed by a fall which reaches its minimum in a few hours. This fall of pressure in the brachial artery is due to a corresponding rise in the splanchnic blood pressure due to the flushing of the intestines with blood." Hence the balance of the flow to the central and superficial areas is fairly even and easily altered in health, quite as even and easily diverted as the balance of the flow of water along a mill leat and over the weir, and therefore the amount of increased pressure necessary to force the blood into the central parts is not great. But assuming that the main stream corresponds to the splanchnic area the condition comparable to the removal of the weir has alone been considered in treating of this subject.

If a vessel of the splanchnic and portal areas (B) and another of the superficial area (A) in a normal condition be represented diagrammatically as in Fig. 4, then Fig. 5, according to the views which I have suggested

FIG. 4.

FIG. 5.



and also according to the view that paralysis of the splanchnic area is the cause of shock, would indicate the distribution of the blood produced in an extreme instance of this condition; the blood pressure in the carotids would be lowered if the change progressed sufficiently and in the splanchnic area it would be raised owing to the altered volume of blood in each. The same relative alterations of pressure would occur whether contraction of the superficial arteries or dilatation of the splanchnic vessels was the cause of the vascular change. Hence, even in the carotid a lowered blood pressure cannot be regarded as a proof of relaxation of the arteries. In fact, if the arteries generally are relaxed it is very difficult, indeed, to understand the distribution of blood pressure that Dr. Crile found during shock. One would expect the increased internal pressure and the diminished carotid pressure to favour an even distribution of the blood and to bring both pressures towards the normal. The difficulty is fully explained if, as I believe, the arteries, and especially the systemic vessels, are intensely contracted.

It is generally stated that the veins are very full in the condition of shock, and of course that part of the blood which is not destroyed must be disposed of somewhere in the body. In spite of the view that the vaso-moter centre is exhausted it is quite certain that the blood is not on the surface. Hence it must be in the warmer central parts or in the veins. But cyanosis is a very rare condition, if it ever occurs, as a result of shock, and although the blood may be mostly in the veins after death I have never seen venous congestion during life caused by shock alone, and I have seen the abdomen freely open in many cases of severe shock Moreover, it seems to be inconceivable that the veins should lose all tone if life is to continue. In some cases of heart disease and in conditions obstructing large veins an obvious distension of these vessels may be gradually produced, but although distended they maintain a certain amount of contractile power. A distension to a similar degree occurring as an immediate consequence of an injury would indicate a marked loss of tone and unless quickly recovered from would almost certainly precipitate death. But it is quite probable that the internal and warmer parts of the body should be able by dilating to accommodate all the blood expressed from the surface without any loss of tone either in arteries or veins, and therefore without danger, just as the flow of blood to the splanchnic area is increased during digestion. Of course, the internal arterioles must also be contracted as otherwise the effects of severe hæmorrhage would be produced.

It is said that "further proof that exhaustion of the vaso-motor centres is the cause of shock is afforded by the fact that when profound shock has been established procedures which normally produce marked stimulation of the vaso-motor centres with a corresponding rise in blood pressure have no such effect, such procedures, for instance, as electrical or traumatic stimulation of large nerves, injection of strychnia into the veins, asphyxia, &c., all of which must produce a rise in blood pressure if the vaso-motor centres are not exhausted."[17] In coming to this conclusion, however, the fact is overlooked that if stimulation of a nerve produces an intense contraction of an artery an increased stimulation may not be capable of causing any greater change. Much stress is also laid on Dr. Crile's experiments to prove that it was possible to produce shock by cutting out the action of the vaso-motor centres in a healthy animal. Having thus reduced the blood pressure from 115 millimetres of mercury to 50 millimetres—"that is to say, to the level of profound shock"[18]—so that "no form of stimulation caused any rise in the blood pressure," after a time adrenalin was injected and "the pressure at once rose to 250 millimetres of mercury and this pressure was maintained for nearly two minutes." But an experiment showing the effects of a drug on the vessels when their paralysis has been undoubtedly induced cannot prove that in shock the vessels are paralysed.

There is another point of great importance as evidence of the state of the vessels in shock. It is easy to understand that, beginning with the arteries in a moderate state of contraction, a relaxation may be produced throughout the body, accompanied by a fall of blood pressure in all the larger vessels and that a gradual return to the normal condition may take place. It is also clear that an intense contraction of the arteries may occur and that a gradual relaxation may follow, but if an artery becomes intensely contracted its subsequent dilatation must be accompanied by an increase of the volume of blood in it and by an improvement of the pulse if the vessel is in a palpable position—an improvement which accompanies a relaxation of the artery concerned. If it is imagined, however, as I understand that Mr. Mummery and Dr. Crile maintain, that a contraction of the vessels takes place and becomes as tight as possible and remains so until the vaso-motor centre is exhausted, and that the contraction then gives place to complete relaxation, and the condition of shock ensues, we should expect that at the time when this exhaustion occurs there would be a sudden change in the vascular system from intense contraction to complete dilatation, and, so far as I know, no symptoms indicating such a change have ever been described or recorded.

The only possible explanation that occurs to me of the view that the vessels are dilated during shock and that, as the condition of shock develops, the arteries which contract as a first effect of an injury do not become fuller, is that the relaxation of the blood-vessels may occur at a very early stage of the mischief, before the radial arteries contract. But it seems very unlikely that an exhaustion of the vaso-motor centre can occur before such an artery as the radial becomes well contracted. In a paper published by Lord Lister[19] it is recorded that repeated stimulations with a needle of portions of the brain and of the spinal cord produced intense contractions of the vessels in the web of

[15] THE LANCET, March 18th, 1905, p. 699. [16] Ibid. [17] Ibid., p. 701. [18] Ibid.

[19] On the Parts of the Nervous System Regulating the Contractions of the Arteries, Philosophical Transactions, vol. cxlviii., pp. 610, 611.

the frog's foot as often as the irritation was applied until the brain and the cord were completely disorganised. It was also brought out that a very small connexion between the spinal cord and the nerves to the limbs was sufficient to keep up the effective influence of the cord on the vessels. These observations seem to indicate that it is very difficult indeed to exhaust the vaso-motor centres.

The decrease of pressure in the carotid when caused by shock takes some time to occur. "In all the experiments in which pure shock was produced it was found that a considerable time was required, usually half an hour or more"[20]; although such vigorous methods as "burning the paw," "somatic dissections and exposure and manipulations of splanchnic area," "double amputation at the hip joints and long continued manipulation of the sciatic nerve," &c., were adopted for the purpose of inducing shock. By clinical observation with the Riva-Rocci instrument Mr. Mummery found that in abdominal operations during the first stage, varying in length from ten minutes to half an hour or longer, there was a "well marked but irregular rise in the blood pressure." During the next stage "the general tendency was towards a fall." The third stage, only seen in very severe operations, "was marked by a steady and progressive fall in the blood pressure." In certain cases[21] in which it is not stated that the symptoms of shock were extreme a very great fall of blood pressure was recorded, for instance, "from 155 to 110 in ten minutes," whilst glands attached to the carotid sheath and vagus were being exposed and dragged upon; and from 135 to 90 during an amputation through the thigh for sarcoma of the knee. In a case of cholecystotomy a fall of 165 to 125 was observed during the first 15 minutes of the operation.[22]

If we consider the very vigorous methods employed by Dr. Crile and the fact that the early stages of an operation on the abdomen can hardly produce any shock at all unless the patient is already very depressed, it seems to me that there is evidence that the fall in blood pressure is more easily induced and occurs earlier in the brachial than it does in the carotid and according to the view that the arteries are contracted this might be expected.[23]

The blood pressure in the carotid arteries would be only slightly and gradually reduced by the diverting of the main stream into the central parts because the larger arteries contract by elasticity rather than by muscular effort and therefore to a comparatively slight degree. Nevertheless, if it is sufficiently forcible an intense contraction of the superficial vessels must throw the bulk of the blood into the central vessels and into the veins. If these relax the pressure in the carotids will fall somewhat suddenly and when this happens the patient must die. When an animal is approaching a condition of extreme shock, if, as I believe, the carotids are tensely contracted, the same difficulty that is found in the radial—namely, the difficulty in deciding whether a change of pressure is due to a contraction or to a relaxation of the vessels—must arise. When the arteries are tensely contracted, when the quantity of blood in the body is diminished, and when a large proportion of the blood has been forced into the portal system any further stimulus to arterial contraction by sending more blood into the internal vascular areas must tend to reduce still further the blood pressure in the carotids and, as I have pointed out, this accounts for the rapid fall of blood pressure in those vessels which has been found immediately before death. Thus, a fall of blood pressure in the carotid arteries brought about by a vaso-motor contraction may be explained. On the other hand, any treatment or conditions tending to dilate the systemic vessels by diverting the flow of blood from the internal to the superficial parts must tend to increase the blood pressure in the carotid by causing its distension, but inasmuch as a large quantity of blood may be in the portal system, from which it cannot be very quickly released owing to the intervention of the hepatic capillaries, the readjustment of pressure cannot take place all at once and therefore the immediate effect of a relaxation of the systemic arteries, especially if the relaxation is sudden, may be a diminution of the blood pressure in the carotids.

From the foregoing considerations it seems to me that if this subject is fully examined in all its bearings it becomes obvious that those conclusions which are founded on the view that every fall of pressure in the vessels indicates an arterial relaxation require to be carefully revised.

CLINICAL CONSIDERATIONS.

I was led to believe that the phenomena of shock are due to a contraction of the arteries by noting that evidence of anything like a dilatation of the vessels generally, or in exposed parts of the splanchnic area alone, is usually wanting during life, even in conditions of the most severe shock produced by abdominal operations. Moreover, I have often noted in the course of an operation that a state of profound shock checks hæmorrhage from small intra-abdominal vessels, just as it interferes with bleeding from a superficial wound. In both cases the arrest of hæmorrhage favours the view that the vessels are contracted and not dilated. On the other hand, larger vessels in the centre of the body bleed very freely when divided as if the pressure within them was great in proportion to their size. But the most conclusive evidence that I have discovered of the view I advocate has been the result of a comparison between the result of a comparison between the state of the radial artery, of the carotid artery, and of the heart in individual patients.[24] In the large number of cases that came under my observation when I first joined the staff of the Samaritan Free Hospital, and when I had abundant leisure to study them, many suffered from severe shock and I found a few in which the evidences of this condition were unmistakeable but in which there was a persistently slow heart action, the beats being from 80 to 90 or less and in one case as slow as 48 per minute. In some of these cases the cardiac impulse ceased to make any perceptible movement in the radial artery but when the heart and large vessels were examined the latter showed a vigorous impulse, whilst the sounds of the heart were slow, loud, and distinct, the second sound being reduplicated. These conditions seemed to me to indicate great cardiac power and an increased opposition to the flow of blood from the heart produced by an intense contraction of the arteries, those as large as the radial being reduced to a very small size. There was no doubt about these patients being in a state of shock and sometimes it was exceedingly difficult to revive them. The pulse at the wrist could be observed gradually coming back as the state of shock passed off.

The facts which I have stated, although such well-marked cases want much looking for, are very definite, and the conditions seem to me altogether incompatible with a state of dilatation of the arteries generally or of complete relaxation of those in the splanchnic area. I studied shock in such cases in connexion with conditions, sometimes seen in the same patients, sometimes in others, in which also the pulse was exceedingly small or even absent at the wrist, whilst the

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[20] Blood Pressure in Surgery, p. 298.
[21] THE LANCET, March 25th, 1905, p. 776.
[22] Ibid., p. 777.
[23] For the purposes of argument I have accepted the assertion that a fall of blood pressure in the carotid takes place, as recorded by Dr. Crile, but it seems to me probable that by the method adopted a fall of blood pressure might be recorded earlier than it would occur if the manometer were not used. Dr. Crile says that the method is "not totally devoid of inaccuracy" and amongst other causes of this he says that "the circulation peripheral to the cannula is lost" and therefore there would be a tendency "to raise the blood pressure in the artery in question." But if the circulation peripheral to the cannula is lost the cannula must, according to my views, tend to hasten the diverting of the blood to the warmer and more central areas—to exclude the water from the mill leat and to throw it over the weir—and so it would tend when the condition of shock was well developed rather to diminish the flow to the superficial parts and also to diminish the pressure in the vessel in which it was placed.

[24] Much information would be obtained by accurate simultaneous records of the blood pressure in the carotids and in the brachial or radial arteries but the question does not seem to have been considered experimentally from this point of view. In Dr. Crile's book on "Blood Pressure in Surgery," published in 1899, he recorded the results of comparative observations. In his first experiment in his earlier work he placed a "cannula for central pressure in left carotid for peripheral pressure in right femoral artery." In his second experiment "central pressure in right femoral, peripheral in left" were recorded. In his third he started the experiment with "*central pressure in the right femoral, 160 millimetres; peripheral in left, 70 millimetres.*" In the seventh experiment the central pressure was in the femoral artery; the *peripheral* in the *carotid*. In the 100th experiment he speaks of a gradual rise in both the arterial and venous pressures, but he does not in this case state where his observations were taken. In another passage he speaks of "the peripheral, the arterial, and the venous pressures" and in his second book also he refers to peripheral and central pressures. The exact meaning of a *peripheral* pressure in the *carotid* artery and of "a central pressure of 160 mm. in the right femoral with a peripheral of 70 mm. in the left" is not stated and as such records are not detailed in Dr. Crile's second book I think it may be inferred that their value was not considered great. As far as I can gather the peripheral pressure means the pressure in an artery from the circulation derived through anastomoses but this is not clearly stated. It does not appear that in any case the direct pressures in a small artery and in the carotid were taken at the same time and a *peripheral pressure in the carotid* is, I think, only to be explained in the way I have suggested.

heart beat slowly and powerfully in the course of a post-operative febrile reaction, during which the temperature ran as high as from 102° to 103° F. before any marked increase of pulse-rate occurred. Sometimes the heart action continued slow and the radial pulse gradually returned to a normal condition, but if the patient died the heart action was always hastened towards the end. I came to the conclusion that the vascular changes were the same in these febrile cases and in cases of shock, that the arteries were tensely contracted and therefore caused an increased opposition to the blood flow from the heart in both conditions, whilst the slow cardiac action in the particular cases to which I now refer depended on an unusual muscular power which enabled the heart to propel in the tissues sufficient blood for their nourishment without any necessity for hastening its rhythm. It is, as a rule, the overworked heart that hurries.

In studying cases of traumatic fever an increase of the pulse volume in the radial lasting from 20 to 50 hours more or less may often be observed and if the patient does well this increased fulness of the pulse ceases almost imperceptibly until normal conditions return. If, on the other hand, the patient should die with increasing fever on the third or fourth or fifth day after an operation the full pulse of the first stage gradually changes to a small hard pulse and at the end of the third day the effects of the cardiac contractions may be imperceptible at the wrist. The same changes may often be traced, but less easily because of their quicker development, in cases of shock gradually induced by a long operation. The changes in the pulse from full to small during the febrile reaction after an operation may be so gradual that, as I have said in regard to the state of the vessels during shock, it is to me inconceivable that there can be at first a gradual contraction of the arteries sufficient to exhaust the vaso-motor centres, which afterwards changes to a complete dilatation without the occurrence of definite if only temporary symptoms of the flushing of the distal vessels with blood. I therefore believe that the cause of the fall of pressure in fever is the same as it is, according to my opinion, in shock—namely, an intense contraction of the arteries.

There is another symptom in shock which is of great importance as evidence of the condition of the vessels. Mr. Mummery says that "partial anuria always occurs in shock and complete anuria is not uncommon." This is accounted for, he says, by "the lowered blood pressure."[25] It seems to me, however, that a lowered blood pressure in the carotid or radial, due to relaxation of the arterial system, to which Mr. Mummery appears to refer, should be accompanied by an increased pressure in the glomeruli of the kidney. I have argued on a previous occasion[26] that anuria in severe febrile conditions is due to contraction of the arteries and to consequent lowering of the blood pressure in *the glomeruli* accompanied by a rise of blood pressure in the central vessels, and it still seems to me that this is the true explanation of the anuria of shock.

THE STATE OF THE BLOOD IN SHOCK.

When the arteries contract, in the absence of obvious venous congestion, a tension proportionate to the vascular contraction must be induced within the tissues or in the lymphatics throughout the body, because the more fluid parts of the blood must be forced out of the vessels. The tension in the tissues may be relieved by sweating, a process which is to a great extent independent of the blood-supply to the skin, for a secretion of sweat in the feet of a cat may be induced by stimulating the medulla oblongata three-quarters of an hour after death.[27] I have pointed out in considering the transference of the chief flow of blood from the superficial to the internal parts that the extra force required in the superficial arteries is not very great, because it is only a normal every-day change that is produced, although under great vascular tension in all the areas concerned. In the same way no very strong pressure need be necessary to cause the liquid parts of the blood to pass into the tissues, for exchanges between the blood and the tissues and between the blood and the lymphatics are constant in health. That the fluid parts of the blood quickly find their way out of the blood-vessels is shown by the fact pointed out by Mr. Mummery that after an operation on a healthy animal has proceeded for some time the specific gravity of the blood commences to rise. This rise of specific gravity in the blood is a very difficult fact to explain as part of a condition in which complete vascular relaxation exists. In the latter condition there must be a strong tendency to absorption of fluids *from* the tissues into the vessels and this would bring about a diminished specific gravity of the blood, for the blood plasma has a lower specific gravity than that of the blood as a whole.[28]

I do not think there can be any doubt that the alterations in the specific gravity of the blood which take place in the state of shock are due to physiological osmotic processes influenced by alteration in pressure in the vessels, but the changes in the specific gravity of the blood taking place during shock do not seem to be those which ought to arise if there is a complete relaxation of the arterial system during that state. On the other hand, the increased specific gravity of the blood which is found to exist during shock is fully and at once explained by, and therefore affords strong support to, the view that the blood is subjected to compression. The rise of the specific gravity, indeed, seems to me incompatible with any other view founded on mechanical conditions. Moreover,[29] the specific gravity of the blood falls after hæmorrhage, and this difference, the *rise* of specific gravity during shock and the *fall* brought about by hæmorrhage, seems in itself strongly to suggest that during hæmorrhage the vessels close in on the diminished blood-supply on account of the elasticity of their walls but that in shock the vessels are forcibly contracted. The clinical effect is almost identical in the two conditions, so that it may be extremely difficult to say, after an abdomen is closed, for instance, whether a patient is suffering from shock or from internal hæmorrhage. The resemblance in many of the symptoms, according to my view, is due to the fact that both hæmorrhage and extreme contraction of the arteries deprive the peripheral tissues of their blood-supply and this would seem to be the ultimate cause of death in both cases, the heart continuing to beat and to endeavour to force the blood onwards to the last.

THE EFFECTS OF SALINE INJECTIONS AND OF OTHER METHODS OF TREATMENT.

Certain methods of treatment are easily understood if the vessels are in a condition of contraction during shock. For instance, according to Dr. Crile[30] saline injections invariably raise the blood pressure, but the beneficial effect is less in proportion to the degree of shock and the fluid finds its way out of the vessels and into the tissues more quickly when shock is profound—that is to say, the more firmly contracted the vessels are the less fluid they will take in and the effects which Dr. Crile has found to take place are those which should be expected if the arteries are contracted. It seems to me that so much cannot be said if it is maintained that the vessels are relaxed. Again, when the effect of shock is passing off saline injections are as useful as they are after hæmorrhage, but at this time the vessels are dilating and are sucking in fluid wherever it can be obtained. Hence, a saline injection into the rectum acts almost as quickly as if the fluid is put directly into a vein. These observations suggest that the physiologico-dynamic difficulty of getting rid of the blood is an important element in preventing or delaying the onset of serious symptoms of shock. All conditions which keep up the blood pressure in the systemic vessels seem to assist in preventing the onset of this condition. The effects which would follow if the solid parts of the blood could be got rid of as quickly as the plasma are clearly indicated by the results of a hæmorrhage during an operation, for there is no complication more likely to precipitate a condition of shock than a loss of a considerable quantity of blood. Pressure on the splanchnic area by forcing the blood into the superficial parts and clamping the aorta above the cœliac axis by preventing the flow of blood into the splanchnic area also delay the effects of shock by keeping up the pressure in the vessels which supply the brain. It seems to me that adrenalin and ergot probably act in the same way by bracing up the internal vessels. Adrenalin is described as the strongest hæmostatic and the strongest vaso-constrictor known. It is, however, certain that if in shock the superficial vessels are intensely constricted no drug can have any great effect in producing a further contraction in them, but if the internal vessels are dilated a very powerful vaso-constrictor would act exactly as pressure on the abdomen does and would force the blood into the superficial areas and so would delay the onset of shock.

[25] THE LANCET, March 25th, 1905, p. 776.
[26] The Physiology of Death from Traumatic Fever, p. 84.
[27] Landois and Stirling, second edition, p. 575.
[28] Ibid., p. 3.
[29] Ibid., p. 3.
[30] Blood Pressure in Surgery, p. 269.

Certainly nothing brought forward in regard to adrenalin is sufficient to outweigh the evidence that the arteries are firmly contracted during shock. It is obvious that all methods which tend to brace up the internal vessels, unless they at the same time relax the superficial arteries, must throw a very great strain on the heart and they may therefore lead to sudden death. As regards the effects of warmth during shock, Mr. Mummery says that "the application of heat has but little influence upon the blood pressure and certainly does not tend to raise it."[31]

Theoretically, of course, warmth is harmful if the vessels are relaxed and cold applications should be beneficial. But when a patient is in a state of extreme shock if the hand is held over the mouth it is evident at the first expiration that the internal temperature is greatly lowered. The air returned from the lungs is not warm. Thermometric observations in the rectum record a falling temperature. I have no doubt that a low temperature is one of the most powerful aggravating causes of shock and Dr. Crile stated that when the temperature was low "the animals seemed to succumb more readily than under the ordinary warmth."[32] If, however, it is believed that the arteries are contracted during shock, the advantages of warmth and the pernicious effects of cold on the vascular system are at once obvious. Dr. Crile came to the conclusion that "in true shock the use of stimulants acting upon the vaso-motor, the cardiac, and other centres of the medulla are on the whole either inert or harmful."[33] Concerning alcohol, he wrote that "in a number of the experiments the decline in the blood pressure was as prompt and as marked as in the administration of amyl nitrite and nitro-glycerine." It was recorded that "the immediate effect of nitro-glycerine and amyl nitrite upon the pulse was an increase in its volume and a decrease in its frequency. ..... The immediate effect on the blood pressure in almost every instance was a fall ..... compensation usually took place in a few minutes."[34] Dr. Crile recorded many experiments in which, by alternately administering vaso-dilators and inflicting injuries, he induced by both procedures, almost invariably, a fall in blood pressure when the animal was in a state of profound shock. But I have pointed out that in such cases a contraction of the vessels and a relaxation of the vessels may both give rise to a reduction of the blood pressure in the carotid arteries. Hence these experiments do not seem to me to prove that injuries and alcohol and amyl nitrite all act as dilators. Moreover, Dr. Crile has not explained the increase in volume of the pulse which he recorded as an effect of nitro-glycerine and amyl nitrite. In the case of alcohol also, Mr. Mummery has noted that after its administration, on examining the radial, "an increased flow through the artery gave the impression that the blood pressure had been raised."[34] This impression is described as "misleading." But the increased flow of blood in the vessels is important. When a surgeon finds his patient pulseless in the course of a severe operation and finds, as he often may, that a syringeful of brandy injected under the skin brings back the pulse, if even only for a time, it is easy to believe that the radial artery has been intensely contracted and that the vaso-dilator action of the alcohol has enlarged the vessel and has done good. On the other hand, if, as Mr. Mummery and Dr. Crile maintain, the patient is pulseless from extreme relaxation of the vessels it is not clear to me how a further vaso-dilator effect can make the pulse become more easily felt. There is no record of an increased traumatism bringing back the pulse in the radial artery when shock is profound, whereas whisky and amyl nitrite generally have this effect. In normal conditions also whisky acts as a vaso-dilator but the first effect of an injury is a constriction of the vessels. Hence the effects of trauma and of vaso-dilators seem to me to be opposed to each other both in normal conditions and in the state of profound shock.

According to the view that the vessels are contracted in severe shock, as diagrammatically represented in Fig. 3, and the pulse cannot be felt at the wrist because of the smallness of the radial artery, it is obvious that if a dilatation takes place the condition in Fig. 2 with a more easily felt radial pulse will be produced, and if the peripheral dilatation continues the condition found in Fig. 1 will develop when the radial pulse is more soft and the pressure within it is again lower. The phenomena described as following the administration of alcohol seem therefore consistent in every detail with the view that the arteries are contracted during shock and that alcohol acts beneficially by dilating them. As regards ether, according to Mr. Mummery, it "causes a rise in the blood pressure in almost all cases ..... throughout the whole period of ether anæsthesia, any fall in blood pressure which occurs during an operation being due to the steps of the operation and not due to the anæsthetic."[35] On the other hand, Dr. Crile[36] wrote that the blood pressure gradually fell during the administration of ether and Muhlbery and Miles[37] reduced the blood pressure by means of ether. This divergence of view arises from the fact that the expression *blood pressure* as commonly used is an inexact term. I think that the idea generally intended and conveyed is the pressure in the large arteries, but the term, if unqualified, may refer to the pressure in any vessel or in the heart. In using the expression, therefore, unless it is stated that the blood pressure in some particular part of the vascular system is intended, there is danger that the meaning of the writer may not be clear and that his deductions also may be of limited application. Mr. Mummery's observations were made chiefly on the medium-sized vessels with the Riva-Rocci sphygmomanometer and Dr. Crile's were for the most part on the pressure in the carotid. I do not think there can be any doubt that the effect of ether on the vessels, like that of alcohol, is vaso-dilator, and that therefore it raises the blood pressure in the capillaries and smaller vessels but lowers it in the central arteries.

The effect of strychnia requires to be mentioned. According to Dr. Crile, shock and an extensive dilatation of the arteries may be produced by this drug, but, as far as I can follow the reasoning, this view is founded on the fact that the blood pressure although raised at first is eventually lowered by repeated full doses of strychnia. It was recorded that "the quickest, easiest, and most certain method of producing shock in an animal for experimental purposes was by the administration of strychnia," and shock was attributed to "an exhaustion of the vaso-motor centres from excessive stimulation." But in describing the effects of strychnia from this point of view there is the same difficulty as in the case of excessive vascular dilatation attributed to traumatism. There is no description of the change from excessive contraction to excessive dilatation caused by exhaustion of the vaso-motor centres and it is fairly certain that the excitability of the spinal column would not be less and that the initial vascular contraction would be more marked under the influence of strychnia.

If the view that the arteries are contracted in shock and in fever is adopted many conditions otherwise obscure are made simple. A very severe injury may kill at once without any lesion of the parts essential to life. This may be accounted for by a contraction of the vessels so powerful that the heart's action is at once arrested. There can be little doubt that the power of the arterioles is sufficient to overcome that of the heart but the balance of the opposing forces is controlled and kept compatible with a continuance of the circulation by the vaso-motor nerves as long as life continues. Not only death from injury but also death from fright may be explained in this way. The blanching of the skin from fear may often be observed. The superficial vessels are obviously contracted and an exaggerated action of this kind might arrest the movements of the heart. Such deaths may, I think, be due to a contraction of the arteries producing sudden heart failure, but probably other causes, such as a direct cardiac inhibitory action, are also at work. Important physiological effects are often due to more than one cause. In gradually induced fatal shock the shutting out of the blood from the brain seems to be a very important cause of death. The heart beats to the end and is ready to resume its functions if the vessels relax. It is obvious also that in a case of prolonged fever from septic mischief when the vessels are chronically in a state of tension, apart from other causes at work, an extra stimulus to vascular constriction will have a greater and more prompt effect than in a healthy man with an aseptic wound. And again, in a septic case if the patient survives a severe operation the contraction of the vessels accompanying the subsequent fever, which is inevitable in such circumstances, if it

[31] Surgical Shock, p. 136.
[32] Blood Pressure in Surgery, pp. 406, 407.
[33] Ibid., p. 382.
[34] THE LANCET, March 25th, 1905, p. 780.
[35] THE LANCET, March 18th, 1905, p. 778.
[36] Surgical Shock, p. 137.
[37] THE LANCET, April 1st, 1905, p. 848.

is very intense, must produce vascular symptoms exactly simulating those of shock and death may follow. A fatal issue in such cases is often attributed to shock or to delayed shock, but this has never seemed to me a physiologically exact description of the cause of death. The direct effects of traumatism tend to cease when the irritation ceases and these early deaths are due to a rapidly advancing fever in patients enfeebled by blood poisoning. I think the only possible cause of a true delayed shock is the pain of an operation felt as the patient recovers from the anæsthetic. But it is doubtful if the patient will ever come out of the influence of the anæsthetic when this pain is sufficient to cause death.

CONCLUSION.

In conclusion, I would summarise the views which I have formed on this subject as follows. It is first necessary to get rid of the idea that a fall of blood pressure, wherever it is found, indicates absolutely that the vessels are dilated. On the contrary, *ceteris paribus*, a *contraction* of an individual vessel always *reduces* the pressure within that vessel and the effect on other parts of the vascular system is not invariably the same.

The following is a scheme of the course of the changes in the blood vessels as I believe that they occur during shock. An injury to a nerve causes a contraction of the arterioles throughout the body. If the irritation is sufficiently severe and persistent the contraction tends to increase and to extend to larger vessels as long as the irritation is in action or as long as the operation continues. The radials may become so small that they cease to be felt. From this time onward there is no pulse palpable at the wrist unless the condition of the patient improves. At first the pressure in the carotids is also raised but after a time the blood is forced into the central warmer parts of the body, the vessels in which probably relax on account of the physiological necessity for a conservation of heat, and a distribution of blood similar to that found during the digestive process is brought about with a lowered pressure in the carotids and an increased pressure in the portal system. The veins of the internal parts are possibly enlarged rather more than the arteries but there is no loss of tone in any portion of the vascular system, the evidence being that the arterioles are contracted throughout the body. If the vessels in the splanchnic or in any other large area or if the veins lose their tone death must follow, as if from hæmorrhage. The bulk of the blood is found in the internal veins after death from shock but this is a post-mortem change or the blood flows into the veins as the patient is dying.

During the processes which I have described the blood must be submitted to pressure and this is an important difference between its distribution during shock and that found whilst digestion is in progress. An effect of this pressure is to force the blood plasma out of the vessels into the tissues and as a consequence the specific gravity of the blood is raised. The tendency must be for the blood discs also to be destroyed but there is little time for evidences of this to develop in cases of shock. Death is due to, or at least accompanied by, the exclusion of the blood from the tissues supplied by the peripheral systemic circulation and therefore many of the symptoms closely resemble those of hæmorrhage.

In considering the treatment it must be remembered that when the cause of shock ceases the tendency inherent in the tissues is to recovery. All the afferent nerves of the vaso-motor system, except those stimulated in the injured area, that is to say, the nerves from the whole of the rest of the body, send messages indicating the necessity for a relaxation of the vessels and these messages begin to take effect as soon as the local irritation ceases or becomes more moderate in action. The treatment of the condition must therefore be directed to preventing the ill-effects of a local irritation, to relaxing the vessels as soon as possible, and to keeping up the blood pressure in the superficial vessels until such time as a physiological relaxation takes place. Dr. Crile's experiments show definitely that nerve blocking by cocaine (by injections of cocaine into the nerve trunks above the point of their division) before an operation and the administration of morphine before it tend to prevent shock. Perfect anæsthesia is also of assistance in the same way. With a view to preventing shock and also to relaxing the vessels when shock occurs warmth is of the first importance. Nitro glycerine, alcohol, and ether tend to dilate the vessels and therefore they are useful.

Friction of the surface and the application of rubefacients, such as mustard, are powerful old-fashioned remedies of great value. I was taught by the late Mr. Knowsley Thornton that rubbing the lips was a very efficient agency in improving the circulation when a patient is suffering from the combined effects of a severe operation and of chloroform anæsthesia. The beneficial effects are often very obvious and the treatment is a rational one from the point of view adopted in this paper.

In order to keep up the pressure in the vessels the avoidance of hæmorrhage by every possible means both during and after an operation is of great importance. The injection of saline fluids may afford much assistance, but this fluid is quickly expelled into the tissues, more quickly the more profound the degree of shock, and the effect is therefore temporary and of no use whatever except to gain time which may allow the superficial vessels to be made to relax or to relax spontaneously. In this way saline injections may make all the difference between losing and saving a patient's life.

Pressure on the abdomen, bandaging the limbs, bracing up the internal vessels by means of adrenalin, hemisine, ergot, and strychnine all tend to force the blood into the superficial areas and therefore are beneficial for a time, and they also may prolong life until the arterioles are induced to relax, but these measures must increase the work of the heart to an enormous extent and therefore may directly contribute to the production of death from heart failure.

Although I have confined my attention in this lecture to the condition of the vascular system during shock, it must not be forgotten that influences which produce such powerful changes in the vessels are certain to affect other systems also, and especially the nervous system. For example, I may point out that a severe injury, even if the head is not directly damaged, may produce unconsciousness or, short of that, a dazed mental state. Moreover, during shock the body of the warm-blooded animal seems to be reduced to the condition of that of a cold-blooded animal so that its temperature, both internal and external, approximates to that of the surrounding atmosphere. This is probably one of the most powerful causes of death from shock and therefore, from this point of view also, the advantages of warmth and the disadvantages of exposure are very great. It is possible, therefore, that individual methods of treatment might tend to influence the nervous system advantageously and the vascular or some other system adversely, and therefore it may not be wise to come to definite conclusions as to the usefulness or otherwise of particular remedies from a study of the vascular changes alone.

The Croonian Lectures

ON

THE CHEMICAL CORRELATION OF THE FUNCTIONS OF THE BODY.

Delivered before the Royal College of Physicians of London on June 20th, 22nd, 27th, and 29th, 1905,

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LECTURE IV.[1]

Delivered on June 29th.

THE CHEMICAL CORRELATIONS INVOLVING GROWTH OF ORGANS.

MR. PRESIDENT AND GENTLEMEN,—The chemical adaptations of the body which I have discussed in my first three lectures have been almost exclusively in the direction of increased activity of the responding organ. One cannot, however, draw a sharp line between reactions involving increased activity or dissimilation and those which involve increased assimilation or growth, since under physiological circumstances the latter is always the immediate sequence or accompaniment of the former. It is a well-known fact that the best method of producing hypertrophy of any

[1] Lectures I., II., and III. were published in THE LANCET of August 5th (p. 339), 12th (p. 423), and 19th (p. 501), 1905, respectively.

organ is by increase of its physiological activity, and a good example of the coincidence of assimilative with dissimilative changes is afforded by the action of one of the hormones—namely, secretin—on the pancreas. The most obvious result of injection of secretin is secretion of pancreatic juice. If the animal is in bad condition, so that assimilatory changes are, so to speak, handicapped, this increased activity of the pancreas is attended by a total discharge of the zymogen granules, so that after a few hours the gland on microscopic section is a typical discharged gland. The discharge may go so far, as shown by Dale, that the ordinary secreting cells of the gland lose not only their zymogen granules but also the main part of their protoplasm and acquire the aspect and arrangement of the cells which are familiar as forming part of "Langerhans's islets." If, however, we are dealing with an animal in good condition and are using a preparation of secretin free from harmful admixtures such as the depressor substance usually present in extracts of the intestinal mucous membrane we may succeed in exciting a continuous flow of pancreatic juice for some hours without inducing any change in the aspect of the gland, microscopic sections at the end of four or five hours' continual secretion presenting the typical aspect of a resting gland. In this case the stimulus exciting to activity has at the same time directly or indirectly called forth a corresponding building up of protoplasm and secretory granules. The division of the chemical adaptations which we have adopted must, therefore, relate solely to the primary effect of the excitation involved. In the cases hitherto studied the primary effect has been katabolic or increased activity. In the cases I shall bring before you to-day the primary effect of the chemical stimulus is anabolic. We must not, however, expect that the anabolic stimulus will diminish permanently the activity of the responding organ; rather will its ultimate effects be, by building up the responding organ, to increase its activity.

The most familiar example of a chemical correlation evoking the building up of tissues is that presented by the thyroid gland, though the effects of the chemical substance formed by the thyroid are so widespread and differ to such an extent according to the age of the animal employed that a physiological analysis of its results is still difficult to give. In the growing animal the chemical substance secreted by the thyroid evidently influences the growth of tissues, among others of the bones, and it is a familiar fact that injection or administration of thyroid to cretins will result in a restoration of the child towards normal in increased growth of bones and in development of various functions, including those of the brain and central nervous system. On the other hand, in adults the pronounced effect of injection of thyroid is increased activity of the chemical changes of the body, as instanced by the increased nitrogenous metabolism and disappearance of all over-growth in the subcutaneous connective tissue such as is present in myxœdema. Although, therefore, the main result of thyroid treatment is to restore normal growth where such has been previously wanting it is difficult to say whether its primary effect should be regarded as dissimilative or assimilative. The fact that the thyroid gland can be administered by the mouth shows that the active principle is not destroyed by the gastric juice and would, therefore, remove this from the proteid class of bodies and would diminish very largely any probability of the hormone furnished by this gland being of the nature of a toxin. Whether it is represented by the thyroiodin, the organic iodine compound extracted from the gland by Baumann, is still doubtful and we can only conjecture that in all probability when isolated it will be found to belong to the drug class rather than to the toxin class. We are still quite without knowledge as to the conditions which determine the amount of active substance produced in the thyroid gland. All we know is that the activity of the thyroid, like that of the suprarenal gland, is essential to the normal development of the functions of the body. Whether we are dealing here with a constant process or with a chemical reflex similar to those we have studied in the alimentary canal and evoked by some event affecting directly the thyroid gland we cannot say.

The largest group of correlations between the activity of one organ and the growth of others is formed by those widespread influences exercised by the generative organs on the body as a whole and on parts of the body. The effects of removal of the testes in the male animal on the growth and disposition of the individual have been known for centuries and marked additions to our knowledge of this subject have been made recently by Mr. S. G. Shattock. According to Ancel and Bouin, the interstitial cells of the testis provide an internal secretion, in the absence of which the sexual characters of the male are not developed. The experiments of Shattock and Seligmann show that the formation of the so-called secondary sexual characters must be due to chemical influences from the gland and not to metabolic changes set up by a nervous reflex arising from the function of sperm ejaculation.

Corresponding results have been obtained in the female by extirpation of the ovaries, double oöphorectomy before puberty not only preventing the onset of puberty and the occurrence of menstruation, but modifying the future growth of the whole body in the direction of the male character. It has been shown recently by Marshall and Jolly in a paper read before the Royal Society that the changes in the uterus which determine menstruation are due, not to ovulation, but to an internal secretion arising from the ovary. These observers suggest that the interstitial cells of the ovary may be the seats of manufacture of this internal secretion or hormone and it is interesting to note that, in a research recently carried out by Miss Lane-Claypon, definite evidence is brought forward of the origin of the interstitial cells of the testis from the germinal epithelium and of the complete equipotentiality of those cells with those which are forming the ova and Graafian follicles. Many observations have been made on the effect of administering by the mouth preparations of ovaries, especially in cases where the morbid symptoms were presumably due to abolition of the ovarian functions, either by disease or in consequence of the operative removal of these organs. Although in many cases favourable results are said to have been attained—results which would appear to prove the resistance of the ovarian hormone to digestion in the alimentary canal—it is difficult in this, as in most clinical evidence, to judge how far the results were due to the treatment or to the expectation of the medical man or patient. More definite evidence of a direct influence of the ovary on the growth of the uterine mucous membrane has been furnished by the experiments of Fraenckel, as well as by those of Marshall and Jolly. At the suggestion of Born, Fraenckel removed the ovaries of rabbits from one to six days after copulation in order to decide whether the ovary exercised any influence on the growth of the mucous membrane of the uterus and its preparation for the fixation of the ovum. In every case on subsequently killing the animal it was found that the extirpation of the ovaries had prevented the fixation of the ova. On the other hand, if the ovaries were removed on or after the fourteenth day of pregnancy, which in the rabbit lasts about 30 days, the animals went on to full time and healthy fœtuses were produced. The fact that the corpus luteum of pregnancy grows enormously during the first third of pregnancy and then diminishes in size suggests that this hypertrophy and growth of cells are for the express purpose of influencing the mucous membrane; and Fraenckel states that destruction of the corpora lutea by means of the galvano-cautery is as efficacious as total removal of the ovaries in determining the end of pregnancy. The cells which form the corpora lutea are derived not from connective tissue cells but from the interstitial cells lying immediately outside the Graafian follicles. Their origin is therefore identical with that of the interstitial cells of the ovary—viz., from the primitive germinal epithelium.

These experiments of Fraenckel have been confirmed by Marshall and Jolly, who conclude that the ovary is an organ providing an internal secretion which is elaborated by the follicular epithelial cells or by the interstitial cells of the stroma. This secretion circulating in the blood induces menstruation and heat. In animals which have been deprived of their ovaries and in which the phenomena of heat are therefore absent these phenomena can be reinduced by the injection of ovarian extracts. After ovulation the corpus luteum is formed and this organ provides a further secretion, the function of which is essential for the changes taking place during the attachment and development of the embryo in the first stages of pregnancy.

A still more striking example of growth in response to chemical stimulation from distant organs is afforded by the mammary glands. As is well known, at birth these glands are limited to a few ducts in the immediate neighbourhood of the nipple, continuous with those of the nipple and equal in extent in both sexes. At puberty in the human female there is growth of the breasts associated with some gland-growth, the main increase in size, however, being due to fat. With the occurrence of pregnancy a true hypertrophy

of the gland begins at once and continues steadily up to birth. In the rabbit in which we have studied the changes in the gland it is extremely difficult to find in the virgin even a trace of mammary gland. The nipple is small and undeveloped and on making serial sections through the nipple the gland is found to be confined to a few ducts not extending more than a few millimetres outside the nipple. No trace of secreting alveoli is to be observed. With the occurrence of pregnancy a rapid growth of the gland appears to begin at once. Five days after impregnation when it is still impossible to find the impregnated ovum with the naked eye in the enlarged uterus the mammary glands are marked out as small pink patches about two centimetres in diameter just under each nipple. On microscopic section the gland is found to be made up chiefly of ducts which, however, are undergoing rapid proliferation. The cells lining the ducts are about three deep and present numerous mitotic figures. At about the fourteenth day the whole of the front of the abdomen is covered with a thin layer of mammary tissue. Branching ducts with proliferating epithelium are still the predominant feature on section, but here and there, especially towards the margins of the gland, small secreting alveoli lined with a single layer of epithelium are to be seen. After this time the gland grows with ever-increasing rapidity so that at birth at the thirtieth day after impregnation the mammary glands form a layer about half a centimetre thick over the whole of the abdomen. In the virgin rabbit it is impossible to obtain by expression any fluid from the nipples, but from the fifth to about the twenty-fifth day pinching the nipples results in the expression of a clear, colourless fluid. From the twenty-fifth day onwards this fluid becomes opalescent and during the second and third days immediately preceding birth the fluid obtained is typical milk. The appearance of milk is earlier in multiparous rabbits, and in animals where pregnancies succeed each other rapidly it may be possible to express milk throughout the whole of pregnancy. In the primiparous rabbit termination of pregnancy at any time after the fifteenth day results in the appearance of milk in the mammary glands, a result which has also been observed in the human female. That this onset of lactation is not due to any stimuli, chemical or nervous, received by the mammary glands from the involuting uterus or ovaries is shown by the fact that it may be brought on by performing total extirpation of ovaries and pregnant uterus. The essential feature therefore seems to be in this case the removal of the growing fœtuses.

These facts demonstrate the intimate connexion between the growth and activity of the mammary glands and the growth of the fœtus in utero. Many facts point to a close nervous connexion between the mammary glands and the uterus. I need only instance the production of uterine contractions on putting the child to the breast and the occurrence of hypertrophy of the breast as a result of abnormal uterine conditions. It is, therefore, only natural that the growth of the mammary glands in pregnancy should have been regarded as determined reflexly through the central nervous system, and the nervous nature of the nexus between the generative organs and the mammary glands is still maintained by some writers, such as von Basch, who, however, locate the centres involved in the ganglia of the sympathetic system. There are, however, many facts which militate against our acceptance of such a view. I need mention only some of the more striking of these. Ribbert transplanted in a guinea-pig a mammary gland to the neighbourhood of one ear. The occurrence of pregnancy in this animal was attended by enlargement of the transplanted gland, from which milk could be expressed at the termination of the pregnancy. A similar experiment was made by Pfister on the rabbit. Goltz and Ewald extirpated in the dog the whole of the lumbo-sacral cord. Pregnancy in this animal was attended by enlargement of the mammary glands and the bitch suckled its pups normally. Von Basch suggests that in this case the nervous connexion could still be through the sympathetic system, but apart from the fact that there is no such connexion possible in the sympathetic system, which since Langley's researches is no longer the happy hunting-ground for speculative reflexes, von Basch's own experiments tell against such a hypothesis. Von Basch extirpated different portions of the abdominal sympathetic in the dog and rabbit and found that at the next pregnancy the glands showed their usual signs of activity. The only difference be observed between such animals and normal ones was a certain increase in the colostrum corpuscles, an unimportant difference which might have been occasioned by any trivial circumstance. Physiologists are therefore ready to believe that the nexus between generative organs and mammary glands is a chemical one, though opinions differ widely as to the seat of formation or origin of the chemical stimulus.

Pregnancy commences with changes in the ovary—i.e., ovulation. The occurrence of fertilisation involves growth of the ovaries with their corpora lutea, growth of a fœtus which soon enters in the mammal into close relationship with the maternal circulation, and growth of the uterine mucous membrane and muscle. Moreover, there is formed, partly from fœtal and partly from maternal tissues, an organ of highly complicated structure—the placenta—the express object of which is the nourishment of the growing young animal. It is evident that the chemical stimulus or hormone for the growth of the mammary gland may be manufactured in any of these four organs—the ovary, uterus, placenta, or fœtus—and that, in fact, two or more of these might coöperate in producing the effective stimulus for the mammary gland. The experimental solution of the question must therefore be a lengthy one. Even if we were certain of the seat of origin of the specific hormone we should have to imitate the constant leakage of this substance into the maternal organism and to continue our experiments over a long period in order to produce artificially any growth of the mammary glands. It is impossible, that is to say in a short experiment, to prove the presence of a bioplastin in a fluid, as is so easily done in the case of substances like adrenalin or secretin, the duty of which it is to increase the functional activity of any given tissue. There are a few clinical facts which, though not decisive, give an indication of the direction in which we may seek solution. Thus, in extra-uterine pregnancy the growth of the mammary glands occurs as usual, although there is only a relatively slight hypertrophy of the uterus and its mucous membrane. If, under these conditions, death of the fœtus occurs, growth of the mammary glands at once ceases, although no definite change has taken place in the uterus. We shall be therefore inclined to locate the origin of the hormone either in the fœtus or in the fœtal part of the placenta. The influence of the ovary on the growth of the mucous membrane of the uterus and on the attachment of the fœtus has been already mentioned. This influence is apparently exerted by the luteal tissue. Since the corpora lutea atrophy during the latter half of pregnancy—i.e., at a time at which the growth of the mammary gland is most rapid, it seems unlikely that the ovary will elaborate the specific hormone in question, though the possibility must be excluded by special experiments. For the last 12 months I have been engaged with Miss Lane-Claypon in an endeavour to determine the origin and nature of the specific stimulus which occasions the growth of the mammary glands during pregnancy. In a preliminary series of experiments one rabbit was injected every day for a fortnight subcutaneously and intraperitoneally with an emulsion prepared by grinding up the ovaries from pregnant rabbits. Another rabbit, also a virgin, received a similar emulsion prepared from the placenta and uterine mucous membrane from a series of pregnant rabbits. Each rabbit received about ten injections from as many pregnant rabbits. In no case, however, was any effect produced on the mammary glands.

These negative results caused us to try the influence of extracts made from the body of the fœtus itself. The large size of the fœtuses, however, rendered it impossible to adopt the method we had previously been using—i.e., the injection of emulsions. The injection of emulsions of tissues, either subcutaneously or intraperitoneally, is, moreover, fraught with considerable risk of suppuration, even though scrupulous precautions are taken with regard to asepsis. A large mass of material is introduced which can have no direct bearing on the experiment and in course of absorption must give rise to a large amount of plastic exudation. Proceeding on the hypothesis that the specific stimulus in this case must resemble the other members of the class of hormones in being a body of comparatively small molecular weight, diffusible and not a colloid, we determined in subsequent experiments to inject such constituents of the tissues experimented on as could be extracted by normal salt solution and filtered through a Chamberland filter. In all our later experiments the tissue, whether placenta, ovaries, or fœtus, has been pounded for one hour with sand so as to break up all the cells and after the addition of a little salt

solution mixed with Kieselguhr; the resultant powder, which is almost dry, is then subjected in a Buchner's press to a pressure of 300 atmospheres. The whole of the fluid of the tissues, containing their soluble constituents, is pressed out. This fluid is sterilised by passage through a Berkefeld filter into a sterilised flask and can then be injected in any quantity either into the peritoneum or subcutaneously without fear of septic trouble.

The first experiment carried out with this improved technique was on a rabbit eight months old which had lived in a cage in the laboratory since it was 14 days old. This animal received 15 injections spread over a period of 17 days. The injections consisted of the fluid parts of the whole of the viscera of 66 fœtuses, varying in age from the fourteenth to the twenty-fifth day. The day after the fifteenth injection the rabbit was killed. It was found that fluid could be expressed from the nipples, which were distinctly enlarged, and on reflecting the skin of the abdomen all the mammary glands were seen to have grown to the size found in a rabbit about eight days pregnant. On microscopic section the gland was seen to consist entirely of proliferating ducts which were lined with an epithelium about three cells deep, presenting numerous mitotic figures. The aspect, in fact, both macroscopic and microscopic, was that of a gland incited to grow by the normal stimulus of pregnancy.

The question then arose whether one could not, by increasing the number of the injections and the duration of the experiment, carry on the hypertrophy of the gland to the point of formation of secreting alveoli. As the subject of our next experiment we had a rabbit which had been in the laboratory four weeks. The general aspect of the rabbit and the undeveloped condition of its nipples showed it to be a virgin. This rabbit received 24 injections, which were spread over five and a half weeks, an interval of ten days intervening at the end of the first week, during which the animal received no injections in consequence of the temporary failure of our supply of pregnant rabbits. During this time the animal received the fluid extract of the viscera of 160 fœtuses. Towards the latter part of the experiment the animal improved considerably in condition, the growth of hair on its abdomen became very active, and the nipples enlarged and yielded a colourless fluid when pressed. On killing the animal the day after the last injection the mammary glands were found to form a thin sheet extending over almost the whole of the abdomen. Each gland was about five centimetres in diameter and consisted of branched ducts radiating from the nipple. The peripheral zone of the gland was swollen and vascular and on section was found to contain alveoli. Both in the alveoli and in the epithelium of the ducts, which was many-layered, many mitoses were seen, showing that cell proliferation was actively proceeding.

During the last 17 days of this experiment the rest of the bodies of the fœtuses after the extraction of the viscera were finely minced and ground up and boiled with normal saline solution. While boiling the mixture was rendered slightly acid to precipitate the proteids and then filtered. The filtered extract was injected intraperitoneally into a rabbit which had been in the laboratory about two months but from the size of the nipples had evidently been previously pregnant. After the injection had been repeated for 10 or 12 days it was found that milk could be obtained by squeezing the nipples. On killing the animal the abdominal wall was covered with a well-marked layer of mammary tissue which contained many alveoli. In some of the ducts there was some indication of proliferation. Both alveoli and ducts contained fluid with fat granules and colostrum corpuscles. Although our failure to obtain a virgin rabbit for this last experiment rendered it impossible to be absolutely certain that the gland tissue had undergone hypertrophy as the result of our injections, the occurrence of secretion and the appearances observed in parts of the gland rendered it probable that we were really dealing in this case with a specified stimulus to the mammary gland and suggested that the specific hormone of the gland would therefore withstand boiling.

In our next series of experiments we employed four rabbits. Two were injected with the extract of the viscera, boiled and unboiled, and two with extracts of the rest of the fœtus, also boiled and unboiled. For injection with the unboiled extract of viscera we took a rabbit which we knew to have been previously pregnant. The entire uterus had, however, been removed so as to avoid the possibility of any co-operation on the part of the uterus in the effects of our injections. For the injections of boiled viscera a rabbit was taken which, so far as we could judge, was nulliparous. Of the rest of the fœtus the boiled extract was injected into a rabbit which had certainly borne young some time previously. But for the unboiled extract we obtained a rabbit which was nulliparous. Since in this series the fœtuses were divided into four parts the injections were smaller than in the previous series. Each rabbit received 22 injections, spread over 31 days, obtained from 90 fœtuses. The fœtuses varied in age from the twentieth to the twenty-sixth day. The results of this last series were shortly as follows. In both the virgin rabbits there was hypertrophy of the mammary glands, due chiefly to duct proliferation, though not so marked as in the previous series. Towards the end of the injections a watery fluid could be obtained by squeezing the nipples of either of the two rabbits. In the two multiparous rabbits it was impossible to be certain that any actual growth of the gland had taken place. But in each case from the ninth injection onwards typical milk could be obtained on squeezing the nipples.

During the last 17 days of this experiment two virgin rabbits were obtained and were used for trying the effects once more of placenta, uterine mucous membrane, and ovaries. The first received the fluid extract unboiled of 123 placentæ mixed with the fluid extract of the mucous membrane of 14 uteri. The other received 13 injections composed of the fluid extract of 26 pregnant ovaries. In both cases at the end of the experiment the uteri of the animal which had received the injections were found to be somewhat enlarged and congested, but in neither case was there any trace of the growth of the mammary glands.

A consideration of all these results brings us to the conclusion that the specific stimulus which determines the growth of the mammary glands in pregnancy is produced in the product of conception—i.e., the fertilised ovum or fœtus; that it is contained in all parts of the fœtus; that in all probability it withstands boiling; that it passes through a Berkefeld filter, and is not retained to any appreciable extent by the Kieselghur in Buchner's method for the extraction of cell juices. This mammary hormone has apparently a two-fold effect, according as the animal experimented on is multiparous or primiparous. If the animal be a virgin the effect of its injection is to produce hyperplasia of the gland, beginning, as in normal pregnancy, with proliferation of ducts and later leading to formation of secreting alveoli. In the multiparous animal, where there is already a considerable amount of partly involuted mammary tissue, the most striking result of the injection of this hormone is the production of secretion of milk.

The question arises whether these two results are to be ascribed to two substances or whether they represent phases in the action of one substance. A little consideration will show us that in all probability the latter is the true explanation. It has already been suggested by Hildebrandt that the specific hormone for mammary growth is a substance which inhibits autolytic processes in the gland. It is highly improbable that the process of secretion can be ascribed to autolysis. But the idea of an inhibitory substance as a stimulant to growth is a valuable one and consonant with our ideas of the inhibitory process in general. The stationary condition of any given cell is not the expression of inactivity but is the result of the equilibrium between two sets of processes, one set anabolic or assimilative, causing a building up of the cell, the other set katabolic or dissimilative, causing a breaking down of the cell. During activity of a muscle or gland dissimilative processes predominate, causing a loss of material. During the subsequent period of rest there is a swing-back in the direction of increased assimilation, resulting in the making good of the loss during activity. The continued application of a stimulus to dissimilation to any tissue will finally result in its complete destruction and death. On the other hand, the continued application of an assimilatory stimulus, if such an expression may be allowed, results in a piling up of the sources of energy of the cell, with actual growth and probably multiplication of the cells. The result, however, of this continued building up must be an increase in the functional capacity of the tissue so that it will be ready to break down—i.e., enter into activity directly there is any diminution of the assimilatory stimulus. This is what happens in the case of the mammary glands. During the whole of pregnancy the mammary gland is receiving a continual inhibitory or assimilative stimulus from a substance produced in the fertilised ovum or fœtus which, diffusing through the placental villi, circulates in the

maternal blood-vessels. The result of this negative stimulus is a building up of the gland, proliferation of its cells, and formation of new secretory alveoli. As soon as parturition occurs the source of the inhibitory stimulus is removed. As the substance which has already obtained entrance in the maternal organism is used up, the cells built up to a high state of activity begin to break down; the dissimilation which is the concomitant of activity in the mammary cells resulting in the production of milk. At any time during the course of pregnancy in an animal we can remove the source of the inhibitory hormone by excision of the fœtuses or pregnant uterus. We have found that if extirpation of the pregnant uterus be carried out during the first half of pregnancy—i.e., at a time when the mammary gland consists almost exclusively of proliferating duct tissue—the sole result is to bring about atrophy of the tissue already formed. After about the fifteenth day in the rabbit extirpation of the pregnant uterus causes the appearance of milk in the gland alveoli and this milk can be obtained within two days of the operation on squeezing the nipples. In the same way we may explain the secretion of milk which is observed on injecting multiparous rabbits with extract of fœtus. The daily injection of a small amount of extract of fœtus can be but a poor imitation of the continual leakage of the specific hormone into the maternal blood-vessels which occurs during pregnancy. We must, in fact, imagine that during the first few hours after the injection we are really imitating the condition in pregnancy. The specific hormone will, however, be probably absorbed and used up long before the termination of the 24 hours which elapse between each injection. With the disappearance of the hormone the cells already built up beyond their normal point will tend to break down. There are, in fact, every day a temporary pregnancy and parturition, and in all cases where there is a glandular epithelium present at the beginning of the experiment—i.e., in all rabbits which have been previously pregnant—we shall have a tendency to formation of milk in the gland during a certain number of hours in every day of the experiment.

We must conclude, therefore, from these experiments that the growth of the mammary glands during pregnancy is due to the assimilatory or inhibitory effects of a specific hormone produced in the body of the fœtus and carried thence through the placenta by the fœtal and maternal circulations. The removal of this inhibitory stimulus at the end of pregnancy determines the spontaneous break-down of the built-up tissues—i.e., activity which in those cells is expressed by the formation of milk.

Much work still remains to be done in the elucidation of various questions connected with the origin, conditions of formation, and mode of action not only of the mammary hormone but also of the other chemical messengers which I have mentioned in these lectures. But the facts which I have been allowed to lay before you will, I trust, serve to convince you of the great part played by chemical processes in the coördination and regulation of the different functions of the body. If, as I am inclined to believe, all the organs of the body are regulated in their growth and activity by chemical mechanisms similar to those I have described, an extended knowledge of the hormones and their modes of action cannot fail to add largely to that complete control of the body which is the goal of medical science.

ON ACIDURIA (ACETONURIA) AS THE CAUSE OF DEATHS FOLLOWING THE ADMINISTRATION OF CHLOROFORM AND ETHER.

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A PAPER entitled "Aciduria (Acetonuria) associated with Death after Anæsthesia," by Dr. E. G. Brackett, Dr. J. S. Stone, and Dr. H. C. Low,[1] to which reference was made in an annotation contained in the issue of THE LANCET of Sept. 17th, 1904, is of considerable importance. In the first place the authors showed that similar fatal symptoms and post mortem findings to those hitherto attributed to delayed chloroform poisoning might be met with after the administration of ether. These facts at once dispose of the suggestion that the substitution of ether for chloroform would render fatalities hitherto attributed to the action of chloroform alone impossible. It can hardly be doubted that the cases which these authors describe are in all respects similar to those of delayed chloroform poisoning. In their description of symptoms they quoted at length my own account of chloroform cases[2] and said that "a portion of it might almost be taken as an illustration of some of those here reported."

The symptoms and clinical course noted in cases attributed to chloroform are (after a period of 12 hours or so, in which the patient appears to have recovered completely from intoxication produced by the anæsthetic) profuse and repeated vomiting, the vomit eventually resembling the dregs of beef-tea, restlessness, excitement, delirium alternating with periods of apathy, jaundice (occasionally), and unconsciousness deepening to coma. Death usually occurs on or about the fifth day but sometimes later from cardiac or respiratory failure, gradual or sudden. Sometimes death takes place within 12 to 48 hours. Pyrexia is not, as a rule, a marked feature, but in a few instances hyperpyrexia is present. Albuminuria and the presence of casts in the urine are common, although the urine may have been normal before the operations were performed. In addition to such symptoms, Dr. Brackett, Dr. Stone, and Dr. Low drew attention to the smell of acetone in the breath and to the presence of diacetic acid in the urine in other cases. They attributed all the phenomena to acute acid poisoning. Finally the fatty changes discovered after death in the liver, heart, muscles, and kidneys seem to be precisely similar to those attributed to the action of chloroform. Hence it seems highly probable that the same sequence of events may be due to chloroform and to ether and that in either case the symptoms are those of acute acid poisoning.

Now although the presence of acetone in the urine after chloroform anæsthesia has been noted by many observers the symptoms of delayed chloroform poisoning have not, so far, been attributed to acid intoxication, except in cases of diabetes and in one recorded by Brewer of death after operation for appendicitis.[3] The sweet odour of the breath for hours and even days after chloroform anæsthesia has perhaps been regarded as due to the anæsthetic itself and no investigations as to the presence of acetone in the urine have been made in the great majority of cases of fatality after chloroform inhalation. I always regarded the sequence of events as due to auto-intoxication of some kind brought about by the action of chloroform upon a liver previously fatty and therefore on the verge of functional inadequacy. I, however, suggested as an indication of pre-existing fatty liver the history of so-called "bilious attacks" or acute gastric catarrh "associated with the presence of the sweet and characteristic odour of acetone in the breath."

In a recent paper read before the Society for the Study of Disease in Children[4] Mr. H. J. Stiles and Dr. S. McDonald drew attention to the resemblance between the symptoms of delayed chloroform poisoning and those of diabetic coma, now generally held to be due to the production of acido-acetic, β oxybutyric, and other acids which are the poisonous precursors of acetone, which in itself appears to be harmless. They regarded the analogy as supplying a working hypothesis and said that "it seems reasonable to suppose that the blood may contain some of the poisonous precursors of acetone and that in certain cases these are produced in so great an amount as to determine a condition analogous to diabetic coma." But even granting that in cases of delayed poisoning by ether and by chloroform we have to deal with acid intoxication we have yet to decide how this is brought about and also why it should be so extremely fatal.

The view generally accepted now is that acetone is derived from fat and as repeated experiments show that prolonged chloroform inhalation produces advanced fatty changes in various organs and of the liver in particular this would seem to be sufficient explanation of subsequent fatty acid intoxication. But it is hardly credible that in cases where chloroform has only been administered in doses of a drachm or so and for a period of only a few minutes' duration such profound changes

[1] Boston Medical and Surgical Journal, July 7th, 1904.

[2] THE LANCET, Jan. 27th (p. 193) and Feb. 3rd, 1894 (p. 257), and July 4th, 1903 (p. 10).

[3] Annals of Surgery, October, 1902.

[4] Scottish Medical and Surgical Journal, August, 1904.

can be produced as have been discovered after death. Hence it seems only reasonable to suppose that fatty changes in the liver were already present and that chloroform may have increased them. On the other hand, Lengemann asserts that whilst a certain amount of chloroform must be in the circulation before fatty degeneration can be produced in organs, yet this quantity is always present when sufficient chloroform has been given to produce narcosis. If this be so it is extremely difficult to understand why death after inhalation of chloroform is not inevitable instead of being of comparatively rare occurrence. But granting Lengemann's assertion to be correct in the case of chloroform, it cannot be so in the case of ether, for the fatty changes produced by ether are infinitesimal as compared with those of chloroform. Hence we are again drawn to the conclusion that fatty changes are pre-existent yet possibly aggravated by both chloroform and ether. Dr. Brackett, Dr. Stone, and Dr. Low said that it "can be stated positively that the symptoms are not the result of anæsthesia, operation, or shock, unless in the presence of certain underlying causes still undetermined." They exonerated the anæsthetic (ether) on the grounds that in one case ether had been administered without ill effects three years previously and that in a second case, after acetone had disappeared from the urine for a few days, ether was administered without any reappearance of acetone and without harmful consequences. Moreover, they adduce in support of their contention that ether is not responsible, other cases—one of them fatal—in which symptoms resembling those following ether were met in patients who had not undergone operations under anæsthesia. At the same time they conclude that "aciduria" is particularly fatal when following the administration of an anæsthetic and that "decided caution should be paid to those in which there is reason to suspect a fatty condition of the liver." I am quite at one with them in exonerating ether and also chloroform from a share in fatal results of their administration unless "in the presence of certain underlying causes at present undetermined."

Not a few of the cases recorded by myself and others had previously undergone chloroform anæsthesia without ill effects; it was a second administration which proved fatal. Therefore it is reasonable to suppose that "the underlying cause" was present in the second instance though not in the first. In chloroform cases fatal results have been attributed by Shenk to repeating the inhalation before the fatty changes produced have had time to disappear. But as ether only produces insignificant fatty changes it follows that if found extensively after death they must have existed before its administration on the second occasion and have been absent in the first. Hence, again, I am driven to the conclusion that a fatty condition of liver is pre-existent in all fatal cases following anæsthesia and that this constitutes the "underlying cause at present undetermined."

It will be conceded at once that acetonuria may occur in other than operative cases. Yet it must be remembered that such cases are by no means fatal unless occurring in conjunction with other morbid conditions. Acetonuria is found in diabetes, starvation, malignant cachexia, peritonitis, gastric ulcer and other abdominal disorders, sepsis, pneumonia, after poisoning by phloridzin and morphine, and it may be artificially induced by the ingestion of fat. I have met with a fair number of cases of apparently pure acid intoxication in children in addition to those in which it has occurred as a complication of other diseases. But I have never known a case of uncomplicated acid poisoning prove fatal unless, indeed, these cases following chloroform and ether anæsthesia are such. Even in the case recorded by Dr. Brackett, Dr. Stone, and Dr. Low, in which although no anæsthetic was administered the child died with symptoms resembling those following etherisation and chloroformisation, a double intussusception of the jejunum was found after death, and the fatality might as well be ascribed to this as to "aciduria," presuming, of course, that the intussusception was present during life. Hence it is difficult to allow that cases of acid poisoning following anæsthesia are pure coincidences and that the anæsthetic plays no part in their causation.

It is a reasonable hypothesis that the administration of an anæsthetic, whether it be ether or chloroform, is peculiarly dangerous in the presence of a pre-existing fatty condition of the liver. We may assume that in some way it alters metabolism and so causes liberation of noxious acids derived from fat already stored in the liver and perhaps elsewhere. Another view which might be entertained is that whereas the anæsthetic by diminishing oxidation increases a fatty condition of the liver already present, the existence of intestinal poisons at the time leads to breaking up of the fat into β-oxybutyric and other acid precursors of acetone. This would bridge over the difficulty met with by Mr. Stiles and Dr. McDonald to whose paper I have already alluded. In three fatal cases they were able to exclude sepsis; a fourth was that of a child who died, eight days after operation for perityphlitis, from gangrenous inflammation of the œsophagus. Post mortem, precisely the same fatty changes were discovered as in other cases. They, therefore, assumed that the fatty changes were in three cases produced by chloroform whilst in the fourth they were caused by sepsis. Yet this fourth case had been anæsthetised by chloroform eight days before death and therefore the fatty changes might have been as much due to the chloroform as to the septic condition which pre-existed. Presuming that a fatty liver was present prior to the operation and intensified by chloroform it is possible that the leptothrix found in connexion with the œsophageal gangrene in that case was instrumental in breaking the fat up into poisonous fatty acids.

I do not believe from my own experience that any cases which have fallen under my observation have been septic in the surgical sense—that is to say, that sepsis has been due to introduction of germs or poisons by surgically unclean hands or instruments at the time of operation. But, as Mr. Stiles and Dr. McDonald point out, many of the cases reported in Germany and elsewhere were those of abdominal suppuration and it is quite possible that in these toxins or their producers entering, or generated in, the intestinal tract might have acted in the manner suggested upon fat accumulated in the liver. With regard to other causes which have been suggested in explanation of deaths following operations under anæsthetics, antiseptics such as carbolic acid, iodoform, and corrosive sublimate can be certainly excluded. The same may be said of surgical shock or delayed shock and also of fatty embolism. Such causes as home-sickness, fretting, and the like may play some part in some, but certainly not in all, cases.

The nature of the complaint which necessitated operation seems to have little or nothing to do with the fatal results of anæsthesia. In my own series of fatal cases such varied conditions as infantile paralysis, genu valgum, strumous knee, congenital hydrocele, vesical calculus, psoas and iliac and post-pharyngeal abscess, nævus, and webbed fingers were met with in children whose general health apart from local diseases seemed in nowise precarious. The operations necessary for relief of such complaints are performed daily and are not regarded as being attended by any particular danger to life. In some cases they were obviously trivial. We are therefore compelled to conclude that some underlying condition prevails in these cases and renders operations under anæsthetics peculiarly dangerous.

Some have appealed to idiosyncrasy for an explanation but this only tends to stifle all inquiry. We would wish to know on what the supposed idiosyncrasy depends. It is true that certain persons are more susceptible than others to the action of drugs such as quinine, arsenic, iodides, morphine, and mercury, but I do not know of a single instance in which such susceptibility to ordinary doses of these drugs proved fatal except in cases in which their exhibition was contra-indicated owing to underlying conditions ignored or unrecognised. For instance, I have known a case in which respiratory failure following a small injection of morphine was attributed to idiosyncrasy, but the patient was suffering from cerebral tumour. Again, a man suffered from symptoms of most acute mercurial poisoning after taking a few one-eighth of a grain doses of green iodide of mercury, but on inquiry it was found that he had been taking mercury on his own account for many months previously and the mercury was doubtless liberated by the iodide subsequently prescribed.

The appeal to idiosyncrasy implies a pious attitude of resignation which is opposed to scientific investigation. We cannot be content, like Locke, the surgeon-metaphysician, to "sit down in quiet ignorance of those things which upon examination are found to be beyond the reach of our capacities." Locke spoke as metaphysician, not as surgeon, and as the latter he would doubtless have insisted on further examination before deciding that the domains of surgery and medicine were beyond the scope of inquiry.

The whole question needs consideration which hitherto it has not received in this country. Judging from the small number of cases recorded, we might be tempted to assert that they are of extreme rarity. But the fact that a single observer has met with 11 cases occurring in about as many years at a single London hospital for children suggests that such experience can hardly be unique. It is possible that, hidden away in hospital archives and surgeons' note-books, other cases might be found if sought. If so we can only beg that they may be published in order to shed more light on fatalities which are as mysterious as they are tragic.

Conclusions.—1. That both ether and chloroform are dangerous under certain conditions at present undetermined. 2. That the symptoms suggest acid intoxication by the poisonous precursors of acetone. 3. That the origin of such poisonous bodies (β-oxybutyric acid and the like) is in the disintegration of fat. 4. That in practically all cases of death following administration of anæsthetics advanced fatty metamorphosis is found in most organs and in the liver *par excellence*. 5. That acid intoxication arises from such fatty metamorphosis in organs. 6. Although prolonged administration of chloroform certainly produces general fatty metamorphosis it is incredible that such profound changes can be induced by small doses given during short operations. 7. Ether is not capable of producing similar changes, yet they are found apparently to the same extent in deaths following ether as in deaths after chloroform. 8. It therefore follows that such fatty metamorphosis must have existed prior to the anæsthetisation. 9. The disintegration of fat into acid poisons may be due to the direct action of chloroform and ether in altering normal metabolism, or in some way they may favour the action of bacterial toxins present in the intestines in causing disintegration of fat. 10. In any case the pre-existence of advanced fatty changes must be presumed in order to explain fatty acid intoxication. 11. It is probable that the fatty changes in the liver are physiological and of the nature of infiltration rather than of degeneration. 12 If this be so it is possible to understand why anæsthetics should be dangerous at one time and not at another, the element of danger being the superabundance of fat existing in the liver at the time of operation. 13. The storage of superfluous fat in the liver may in some cases be due to the large quantities of cod-liver oil and fattening diet commonly supplied to delicate crippled and rickety children in the hope of strengthening them, coupled with want of exercise.

In accordance with the foregoing views the following practical conclusions may be of service in prevention of untimely deaths of children after operations: 1. Before operation on even fat and apparently healthy children a careful inquiry should be made as to history of so-called "bilious attacks," which may in reality be those of "acidosis." 2. In all cases where over-fattening and want of exercise are suspected operation should be delayed if possible until the patient has for some days been subjected to fat-free diet. Mild purgation during this period is probably indicated. The urine should be examined for diacetic acid and, if present, a course of alkalies, such as bicarbonate of sodium, should be prescribed. 3. It should be remembered that both starvation and fright give rise to acetonuria. The four hours' fast usually imposed on children before operation is too long, especially when one considers that it will necessarily continue not only during the operation but for many subsequent hours. Nutrient enemata should be given, after clearing the lower bowel, two hours before an operation and immediately afterwards. The effect of fright cannot be altogether controlled but may be combated by preventing starvation. 4. The treatment of symptoms of acid intoxication following operations should be by venesection, saline transfusion, and by clysters of solution of bicarbonate of sodium.

Postscript.—This paper was written some months ago. It is now submitted for publication as affording some comments on the interesting case of Delayed Chloroform Poisoning by Dr. E. W. Scott Carmichael and Dr. J. M. Beattie which appeared in THE LANCET of August 12th last (p. 437), and especially on certain of their statements concerning it. One of these statements is: "It is interesting to note that the child vomited two or three times on the day prior to the operation." The other is in the conclusion that death from "delayed chloroform poisoning" must still be attributed to idiosyncrasy or susceptibility.

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THE "CONTRACTED" MUSCLES OF INFANTILE PARALYSIS.

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ANTERIOR poliomyelitis affecting that region of the cord from which are given off the roots of the lumbar and sacral nerves reduces the functional activity of the muscles of the leg and foot and in the majority of cases disturbs the balance of muscular power. From this derangement of muscular equilibrium the various conditions of paralytic talipes are developed, the particular form of distortion being determined by the relative conditions of the opposing muscles which may have been affected. In treatises on paralytic deformity the theory usually accepted as accounting for the production of talipes is that owing to the unbalanced state of the muscles the stronger have been in a condition of over-action, have overpowered their weaker opponents, and by gradually approximating their own points of attachment have become permanently shortened. This theory is certainly inaccurate in one respect, the contraction of the muscles precedes the drawing together of their points of attachment, the latter being not the cause but the result of contraction with which the shortening of the fibres is coincident. It is also extremely doubtful if a muscle will acquire from over-action a condition of permanent contraction. Many children are to be met with among the poor who, not provided with a compensating mechanical appliance, have walked for some years with the foot extended to neutralise a shortening of one lower extremity. Disease or dislocation of the hip-joint present familiar examples of such cases and amongst them contraction never results from the strain to which the extensor muscles are subjected. The causes which excite and the structural changes which constitute the condition known as "contracted muscle" are somewhat complex in their nature; further investigation may well be made to obtain a more reasonable explanation of these abnormal processes than is afforded by the above quoted theory.

Taking as a familiar type of paralytic deformity the case of talipes equinus illustrated by Fig. 1 an attack of anterior

FIG. 1.

poliomyelitis has almost entirely deprived the flexor muscles of contractile power, leaving the extensors with a fair amount of activity although reduced below their normal strength. The nerve lesion in this case occurred when the subject was two years of age; the severe state of equinus exhibited was established at the age of 11 years. In the

progress of acquirement of such deformity there will be in the first stage, when the child commences to walk after the attack of poliomyelitis, no flexion movement of the foot, nor will the heel be raised—the foot is shuffled forwards or is lifted off the ground by over-flexing the thigh. After a time, from two to three years, the extensors will increase in power, raising the heel slightly and keeping it elevated during progression. Examination at this stage will show that flexion movement at the ankle-joint is becoming limited. In conducting the examination the leg must be fully extended on the thigh and the foot flexed by placing the hand along the sole, exerting steady and gentle pressure. The foot must not be relaxed on reaching the apparent limit of movement but the pressure be continued for a minute or so, when under gradually increasing exercise of force the muscles will yield slightly and permit a further amount of flexion, probably bringing the foot nearly to a right angle with the leg. Should the child have been using the limb immediately previous to the test it is advisable to instruct that he be brought again for examination, directing that in the interval between a night's rest and the second visit the foot should not be used in any way. At this second examination it will be found that the foot can be flexed several degrees beyond the position obtained at the first visit. Allowed to progress unchecked by treatment the heel will gradually become more elevated and subsequent examinations, say at yearly intervals, will be attended by the same conditions exhibited at the first investigation, modified, however, in that the yielding to continued pressure will decrease and subsidence after a night's rest will be less marked. Finally, the state of equinus illustrated becomes established, the heel is now raised to the full degree, and no yielding of the extensor muscles can be obtained by pressure, all movements both of flexion and extension are lost, and the ankle is as immobile as an ankylosed joint. A condition has now been reached in which all the muscles of the leg and foot are in like case so far as deprivation of muscular power is concerned, the feeble flexors are atrophied and elongated, and the extensors have arrived at the final stage usually attained by "contracted muscles." It will be agreed that the term "contracted muscle" by no means conveys a correct idea of the muscular lesion. Contraction is a normal attribute of muscular fibre; here we have to deal with a distinct abnormality in the deprivation of the tissue of its ability to relax; "intractile muscle" better defines the state of inextensibility which is the main feature of the defect and the one upon which attention should be especially concentrated.

The case of equinus that has afforded my text exhibits only one phase of the acquirement of muscular intractility, it is the most commonly occurring type, but an almost infinite variety in the behaviour of the muscles is presented in the development of paralytic deformity. There is one constant feature which presents itself in every case of disturbed muscular balance, the stronger muscles always become intractile to some extent, but this is the limit of methodical procedure. In all other respects the muscular system, thrown out of gear by disorganisation of its motor centres, exhibits an eccentricity of conduct which affords a most perplexing puzzle for elucidation by the student. It might reasonably be expected that the greater the difference in the functional powers of opposing muscles the greater would be the degree to which the stronger would become shortened and the more severe would be the grade of deformity developed. Also when all the muscles had been seriously lowered in efficiency it might well be anticipated that those retaining superior power would, in their condition of extreme weakness, acquire but little intractility and be incapable of causing any marked degree of distortion. Yet neither of these propositions holds good in practice, for although examples will be met with in support of both suppositions other cases occur directly contradicting their truth. Thus, in one subject with the flexors greatly weakened and the extensors in fairly good condition the degree of intractility established is often so slight as to allow of sufficient movement for the foot to be placed at a right angle with the leg. With the flexors in like condition in another patient and the extensors so feeble as to be in scarcely better case than their opponents an extreme state of equinus may result, even to hyper-extension of the foot at the ankle-joint. I have seen examples of equinus with the foot extended to a degree which brought the articular surface of the astragalus forwards and entirely free of the ankle-joint, the displacement having been wrought by muscles so wasted that it seemed impossible they could acquire intractility. The Achilles tendon under such conditions has been as tense and the resistance of the muscular fibres equally as obstinate as in cases where the gastrocnemius and soleus muscles were fairly well preserved. Another instance of caprice is exhibited in the varying time which may elapse between the attack of poliomyelitis and the commencement of muscular shortening. It is difficult to fix the date of the first drawing up of the fibres because this seldom occurs under the observation of the surgeon; also, the history of the patient is not often to be obtained from a trustworthy source, and in receiving the account it is always a troublesome matter to differentiate betwixt fiction and fact. About two years may be accepted as the period of interval in the majority of instances but it may be delayed to a later period. Certainly four or five years may elapse, possibly even a longer time. On the other hand, the stronger muscles occasionally elect to display their superior powers even within a few weeks of the central attack. At 15 months of age anterior poliomyelitis caused complete paraplegia in a child who was brought to me three months later. I could excite no movement of the limbs, and giving some general directions as to the management of the case, instructed that the patient should appear again for examination after an interval of three months. At the second visit both feet were extended on the legs to a marked position of equinus, steady pressure obtained flexion nearly to a right angle, beyond this the extensor muscles would not relax. Of course, this child had never used his legs and the conventional theory of over action of the muscles breaks down completely when applied to such a case.

A more familiar example of unused muscles, the fibres of which have become intractile, is illustrated by the accompanying illustration (Fig. 2). Both lower extremities have

FIG. 2.

been paralysed; in the left, the better preserved, muscular balance has not been disturbed; the right limb has been so much wasted that it has never been available as a support. By the aid of crutches, and such help as the stronger extremity could afford, the patient has been able to progress, allowing the right limb to swing about as a useless appendage to the body. In this poor shrivelled member, which might justly be described as consisting of "nothing but skin and bone," the extensors of the leg have developed talipes equinus; the biceps femoris, in addition to producing a valgoid knee, has rotated outwards and drawn backwards the tibia upon the condyles, whilst the flexors and adductors of the thigh have united their forces and added further to

the list of distortions. Such distortion is of twofold interest; by its existence it absolutely controverts the over-action theory and it also offers an excellent example of the development of intractility in muscles which it seems hardly possible to credit with any fibres possessing the slightest functional activity.

The uncertainty attending the period at which muscular intractility first appears, of which examples have been given, is, perhaps, surpassed by that displayed in the acquirement of permanent structural shortening of the fibres. It is impossible to fix the length of time required for the muscles to reach a condition in which their ability to relax is absolutely destroyed, indeed, it is doubtful if complete deprivation of function is ever accomplished except in cases of very long standing. Returning to the case illustrated by Fig. 1 the deformity is of a nature which I classify as tarso-malleolar equinus; one half of the distortion is due to displacement of the foot at the ankle joint, giving the malleolar character to the deformity, while the front of the foot is

FIG. 3

depressed upon the os calcis and astragalus, which constitute the tarsal moiety of the defect. It was necessary in conducting the treatment to reduce the displacement at the tarsal joints, astragalo-scaphoid and calcaneo-cuboid, before correcting the position of the foot upon the leg. This first stage of treatment occupied about seven weeks and when completed it was found that the leg could be flexed over the foot to the degree shown in Fig. 3. In this subject the muscular fibres had been steadily contracting for a period of about seven years, the foot was reported to have been in the advanced state of deformity for two or three years and, as before stated, was rigidly fixed in its extended position on the leg. After seven weeks of absolute rest the gastrocnemius and soleus muscles had relaxed to a degree which gave a sufficient amount of flexion at the ankle-joint for all ordinary purposes. This is certainly an exceptional instance; it is seldom that spontaneous relaxation of the fibres under conditions of repose of the muscles occurs to such a degree in so short a period of time. There is, however, in like circumstances always some decrease of intractility, a fact of supreme importance in directing the treatment of the abnormality and one which can be more conveniently discussed when the methods of treatment are under consideration.

In theorising on the development of paralytic talipes writers have hitherto overlooked the point that muscular intractility is as distinctly a loss of natural function as is muscular paralysis: in the one case ability to relax is reduced and in the other power of contraction is lowered. In both cases the defect varies in degree from a slight aberration which is scarcely appreciable to advanced structural change which completely destroys the normal attribute of the muscular fibres. We know that the loss of contractile power is due to, and is in direct ratio to, the degree of destruction of the motor cells in the anterior cornua; it is possible that from the loss of a controlling influence naturally exercised by the same central structures arises the development of intractility. In the act of walking the extensors and flexors of the feet are alternately contracting and relaxing—the one set of muscles relax as the opposing set contract. If it can be admitted that these movements when once started by impulse from the cerebral centres are automatically maintained by the motor cells of the anterior cornua then it seems to me that the theory I have suggested is not only possibly but even probably correct. It could be assumed that when contraction of the muscles necessary to produce the required movement of the foot has been completed the fibres do not fully relax before a second contraction has commenced. The overlapping of the two actions of the muscle would result in the fibres never being completely relaxed during the whole time that walking was in progress and it may well be supposed that when at rest some period of time would be required for them to become slack. This suggestion is supported by the different degrees of intractility which, as previously noted, are found on examining a limb immediately after it has been in use and again after a night's rest, the muscle being more extensile on the latter occasion. In the early stage of using the limb, after the attack of poliomyelitis, a night's rest will suffice to allow the subsidence of such intractility as may be acquired during the day, but as time passes the relaxing process will not be finished and the subject will start walking on the following day with the muscle still slightly shortened. Some increase of the defect will be promoted day after day, an addition too trifling to be detected by examination at short intervals of time, but sufficient by gradual accumulation during months and years to give rise to a severe grade of deformity. It may be objected that if this incomplete action accompanies the use of the stronger it should also attend upon the use of the weaker muscles in cases where the balance is but slightly disturbed and where a fair amount of power remains to all the muscles of the limb. Under such conditions the weaker muscles will never be fully contracted, even to the degree to which they are still capable of performing that function. Just as from disorganisation of the motor centres the relaxing of the better preserved muscles is not completed, so from the same lack of proper control the fibres of the weaker opponents are never brought to a state of full contraction. Moreover, in the variety of disturbance characterised by a moderate lessening of power of the extensors and flexors, with balance against the latter, the more active extensors will first develop a degree of intractility sufficient to limit flexion of the foot beyond a right angle and having reached this stage no further shortening of their fibres takes place. Thereupon the flexor muscles will come into fuller play and themselves acquire some degree of intractility, the result being that the two conditions—"right-angled contraction of the tendo Achillis" and "claw-shaped toes"—which are frequently met with apart, will in these circumstances be combined in the same foot. Another incident bearing upon this point is worthy of notice—it is possible by treatment to reverse the relative conditions of opposing muscles, to set the balance against those which had been the better preserved; the result then is that the muscles which were originally the weaker acquire intractility.

In endeavouring to clear the obscurity surrounding the various changes consequent upon poliomyelitis the most difficult task is to throw light upon those cases in which the muscles, apparently deprived of contractile tissues, are able to generate very evident distortion. There must be in such a case as that illustrated by Fig. 2 some remnant of contractile tissue existing after the widespread destruction, so it may be concluded that absolute annihilation of muscular function is seldom completed. Voluntary movement can hardly account for the phenomena nor does it seem possible that reflex action can be existent. The only solution that I can suggest is that some feeble stimulus may be issued from the central stations of the cord, erratic messages from a directing centre which has been thrown into a state of hopeless confusion. Be this as it may, the development of paralytic talipes probably depends entirely upon neuropathic influence; the muscles imperfectly stimulated are sluggishly responsive, both in the act of relaxing and of contracting.

The treatment of intractile muscles.—The ill-effects resulting from anterior poliomyelitis being chiefly due to the balance of muscular power having been disturbed treatment

must be directed to regulate as far as possible the action of the affected muscles. Obtaining control over the more active muscles usually receives less attention than does the strengthening of the weaker opponents; this is mistaken policy, for the development of intractility in the former must offer resistance to and limit the action of the latter. The proposal to adopt any measures which will tend to lower the power of the stronger muscles is often objected to; it is argued that by such practice an already weakened limb is still further reduced in strength. That this reasoning is false may be proved by referring again to the case illustrated by Fig. 1; in such a case the flexors of the foot have no possible chance of regaining efficiency during the time that they are being overpowered by the more vigorous extensors. The want of a check upon the stronger muscles in such circumstances contributes to the weakening of the leg and causes the very result which the adoption of re-training measures is ignorantly accused of producing. Too much importance is also given to the reduction of such deformity as may have been developed by the dominance of the better preserved muscles, the deformity being so much in evidence that it appropriates an undue share of attention. As a rule there is very little difficulty about restoring shape to a foot affected with paralytic talipes the trouble is so to deal with the muscles that they may be able, the strong and the weak, to take up their work on fairly even terms after the re-shaping of the foot has been accomplished. It cannot be too strongly insisted upon that with a case of disturbed muscular action, no matter what the grade of paralysis may be, the chief object of treatment should be to redress the balance of power. If this can be done by raising the weaker muscles to the standard of the stronger so much the better; failing this the stronger muscles must be reduced to the level of the more feeble. There may be met with one among 100 cases in which the disparity of power between sets of muscles is so marked that any interference with the strong would be inadvisable, but such an exceptional instance may be disregarded in a general review of the treatment of paralytic deformity.

In the early state of infantile paralysis, when it is seen that one set of muscles is in better condition than the opponents, much may be done to prevent the former from becoming intractile. Such movements of the foot upon the leg as will bring the stronger muscles to a full degree of normal relaxation should be practised regularly, "passive exercises" are valueless, active use of the muscles is imperative, and with very young children it requires some little ingenuity to get what is wanted in this respect. A good deal can be accomplished towards the desired end because the victims of the disease are, almost without exception, children of quick intelligence—they are excellent little patients who readily respond to the instructions they receive. Should some intractility of the fibres be already established and the full degree of relaxation not be obtainable exercises are again to be employed but no forcible extension of the fibres must be attempted. When the shortening stage has commenced anything in the way of force is immediately resisted, therefore the movements must be practised slowly and steadily, endeavouring, as it were, to coax the fibres to a state of submission. Gentle handling, previously described as very necessary when examining a case of paralytic talipes, must be most carefully observed in conducting the treatment, violent measures will be met by obstinacy, and, if the figurative expression may be allowed, a "tug of war" becomes the order of affairs. In addition to the exercises it is advisable to let the child wear a light instrument which shall, when the foot is used, prevent the stronger muscles completing their full degree of contraction. The use of leg instruments is a method of treatment that does not commend itself to some surgeons; the conventional objection to their employment is that it is a wrong principle to require a weak limb to perform an extra task in carrying the weight of the appliance. This was a very fair argument in days gone by, but with the excellent steel now used by skilled mechanicians the weight of an instrument is a very small matter; to be sure, that clumsy contrivance the old "boot and iron" is still a commercial article, but it is only made and used by those who are not acquainted with the more recent improvements in orthopædic mechanism. A well-contrived appliance can be obtained which will offer resistance to the pull of any one muscle, or combination of muscles, to the exact degree that the surgeon may deem necessary and will also favour the action of any weak muscle that may need such assistance.

When such remedial measures as those suggested fail to prevent the development of intractility or to overcome the defect when already present, then tenotomy must be resorted to. In the treatment of paralytic talipes the employment of tenotomy requires the exercise of considerable discretion on the part of the surgeon; the operation is capable not only of relieving intractility but also of producing a reverse effect in rendering the muscular fibres too lax. Upon its introduction and for a long time subsequent thereto tenotomy was practised with the object of lengthening the tendon of an abnormal muscle—"contracted tendons" as they were called in those days—and much discussion took place as to the correct method of treating a tendon after section. One set of authorities favoured the immediate separation of the cut ends so that a new patch might be added of exactly the required length; other practitioners preferred to bring the newly divided surfaces into apposition and afterwards gradually to obtain elongation of the reparative tissue as the healing process advanced, but both parties disregarded the part played by the muscular fibres after their tendinous attachment had been severed. Even now, when it has been recognised that a disorganised muscle and not a contracted tendon is the structure requiring correction no heed is paid to the changes in the muscle and no distinction is made as to the behaviour of the shortened fibres in cases of talipes of different origin. Now whatever may be the effect of tenotomy in the treatment of cases of congenital, spastic, traumatic, or other origin experience has taught me that with paralytic deformity it is chiefly in the muscular fibres that changes occur after the operation. I have pointed out the remarkable relaxation which intractile fibres undergo when placed in a state of rest and the observance of such result convinces me that precisely the same process occurs after tenotomy which places the muscle in a state of absolute repose. It is quite possible by the use of a Scarpa's shoe or other mechanical means to fix the foot so firmly that it cannot be moved upon the leg and yet fail to obtain entire quietude of the muscles; tenotomy gives this result by throwing the muscle completely out of action in separating it from its attachment.

The management of a case after section of a tendon must be conducted according to the degree of intractility existing in the fibres of the muscle. This it is which necessitates the exercise of much care because there is a difficulty in ascertaining what may be the exact state of the shortened fibres. One precaution which should always be taken is to give the muscle a period of rest before operating, the length of time advisable being determined by the relative condition of the opposing muscles. When the difference in functional activity is slight a rest for 24 hours will suffice and the greater the preponderance of power possessed by the intractile muscle the more prolonged should be the period of inaction. With the most severe disturbance a week spent in this manner is not too long, for as we have seen in the case of equinus illustrated by Fig. 1 an even longer period will often be desirable. This it must be understood applies only to those muscles which have an important part to play in the movement of the foot; the combined extensors and the tibialis anticus are especially to be noted in this respect. Fortunately, severe intractility in these muscles is nearly always accompanied by other structural defect—contraction of the plantar fascia, for instance, which requires correcting before the time for tenotomy is reached. The period spent in the treatment of the first stage gives the necessary rest required for estimating the exact state of the affected muscle. The best safeguard against the mistake of exceeding the correct degree of extension is to make a constant practice of not attempting to restore the normal degree of relaxation during the time that the healing of the tendon is in progress. For instance, in the case of the extensors of the foot, for all practical purposes it is sufficient to obtain a degree of flexion that will permit of the knee being brought so far forward over the foot as to be in a line with the end of the great toe. Should there be any further relaxation of the gastrocnemius and soleus muscles after the healing process is completed the adoption of the limit suggested will allow for the additional lengthening, but lacking the observance of such precaution the muscles will be weakened and a case of equinus be converted into one of calcaneus. This unfortunate result, by no means of uncommon occurrence, of course places the foot in much worse condition than when in its first state of deformity.

It is with conditions of disturbed muscular balance in

which the difference is but slightly in favour of one set of opposing muscles that the greater nicety is required in employing tenotomy as the means of correcting the defect, cases in which the extensor muscles have become shortened and limit the flexion movement of the foot to within a degree or so of a right-angled position on the leg, of which an example is given in Fig. 4. This condition, which is very

FIG. 4.

frequently the result of poliomyelitis, is commonly described as "right-angled contraction of the tendo Achillis" (a term introduced in the early days of orthopædic study and retained as a matter of convenience); it not only seriously interferes with the walking power of the subject but also leads to the development of several varieties of structural change in the foot. It should always be corrected by tenotomy, other measures having failed, and there need be no anxiety as to the success of the operation if a little care is exercised during the period that the tendon is reuniting. Immediately on section of the tendon the foot must be placed in a position of full extension on the leg so as to bring the points of attachment of the muscles as close together as possible and this position should be maintained for from seven to ten days. The foot may then during the

FIG. 5.

next ten days be gradually placed at a right angle with the leg and on no account should it be flexed beyond this angle until the union of the tendon is perfect. The relaxation of the fibres is allowed by this method of procedure to take place spontaneously; they avail themselves of the absolute repose in which they are placed to assume their normal degree of length.

To those surgeons who may see danger in the use of tenotomy in such cases, however carefully conducted, a method of operating which I have successfully employed may be recommended as a perfectly safe course to adopt. This consists in making a partial instead of a complete section of the tendon of the intractile muscle. The case, illustrated by Fig. 4, was thus treated and the result is shown in Fig. 5; the degree of flexion obtained might with advantage have been increased; nevertheless, the improvement is well-marked and the patient derived great benefit from the added movement at the ankle-joint. I have subjected six cases of a similar nature to the same operation and in those which I have been able to observe the subsequent behaviour of the muscles there has been no return of intractility. The tendo Achillis was cut to a depth which left about one-fourth of its bulk undivided, the anterior three-fourths being severed and the posterior fourth left intact. The attempt to replace the foot was commenced on the fifth day after operation and proceeded with as rapidly as possible; no force was used but flexion was steadily obtained by the use of a Scarpa's shoe. I was led to making the experiment of partial division in such cases from an experience with an Achilles tendon which, owing to frequent attacks of cellulitis, had become adherent to the skin, the skin itself being so thin and ill-nourished that it was impossible to separate it from the tendon. An attempt was made to perform complete tenotomy at the urgent request of the patient who suffered much from the state of his foot, but a few of the posterior fibres were of necessity left undivided. There was sufficient attachment of the muscle remaining to give reason for suspecting that the operation would cause no subsidence of intractility, an unfavourable anticipation which was not fulfilled, as the muscle relaxed to a degree which afforded sufficient flexion movement at the ankle. It is difficult to account for the effect produced by the semi-division of a tendon, but there can be no doubt that the operation is capable of affording relief where ordinary measures of treatment have failed. It occurred to me that the relaxing of the fibres might simply be due to prolongation of the period of rest and cases were treated to test this point; some weeks of confinement of the foot in a Scarpa's shoe were given before the operation was employed; in every case immediate improvement followed upon the partial division.

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TWO CASES OF GLANDERS.

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CASE 1.—A man, aged 55 years, was admitted into the Eastern Fever Hospital on Oct. 28th, 1903. He was a printer by occupation. The history of his illness as given by his wife was that he had been seized with shivering and pains in the limbs on Oct. 9th. On the 11th he was worse and had to stay in bed, having febrile symptoms. As he did not improve under medical treatment at home he was taken on the 20th to the out-patient department of a general hospital whence he was sent to the Eastern Hospital as a case of typhoid fever.

On admission the patient was found to be very ill. He was in a semi-comatose state with muttering delirium. The temperature was 102·4° F., the pulse was 112, and the respirations were 48. On the skin were to be seen a number of small superficial pustules; they were most abundant on the chest, the outer side of the right leg, and on the right forearm. There were a few on the left cheek, the back, the outer side of the left thigh, and the left upper arm. Besides these pustules there were several swellings of varying size (from one to three inches in diameter) in different places; there was one on the right frontal eminence; there were two on the right forearm, two on the left forearm, one on the right leg, and one on the left leg. The largest swellings fluctuated, the smaller ones did not, but felt nodular. These were freely moveable; some appeared to be in the subcutaneous tissue, others were distinctly in muscles. The largest swelling was that on the right leg. None of the swellings were connected with bone. The tongue was covered with moist white fur. The fauces were normal; there was no discharge from the nose. The urine contained a cloud of albumin. The heart was enlarged. The lungs were slightly emphysematous; there was a friction

sound at the right base in the axilla and crepitations and rhonchi were audible over the whole of each lower lobe. On the morning of Oct. 30th a syringe was put into the swelling on the right leg and some dark brownish fluid, like pus and altered blood, was drawn off. This was examined for organisms and a bacillus resembling that of glanders was at once detected.

The largest swellings were then incised and drained, the same dark, brownish, grumous fluid escaping from each. The patient, however, sank and died on the evening of Oct. 31st. During the time that he was in the hospital the urine contained a cloud of albumin, the temperature varied from 102° to 104 6°, the respirations from 44 to 52, and the pulse from 94 to 124. There was no glandular enlargement. Two or three fresh nodules appeared before death.

Necropsy.—A post-mortem examination was made by Dr. J. H. Whitaker on Nov. 1st. The pustules, nodules, and larger swellings were found to be as described above, but it was ascertained that the nodules and swellings were nearly all of them in muscles. There was recent pleurisy at the base of the left lung and old adhesions over the right lung, especially the lower lobe. The heart was enlarged, the enlargement being due to the increase in thickness of the wall of the left ventricle. The aorta was slightly atheromatous. The kidneys were moderately granular. The intestines, the spleen, the brain, and other organs appeared normal. A microscopic examination of the kidneys made by Mr. Dunstan Brewer showed chronic interstitial nephritis. A further examination of the organism observed in the first instance was kindly made by Dr. G. E. Cartwright Wood and Dr. F. C. Lewis. The bacillus was shown to be the bacillus mallei, both by its mode of growth on media and its physiological action. A streptococcus was also isolated. The bacillus was not a very virulent one. Mr. Brewer demonstrated the bacillus in the skin lesions by microscopic sections.

CASE 2.—A man, aged 33 years, was admitted on Feb. 24th, 1905. He was employed in a large stable belonging to a firm of contractors in the East-end and was taken ill somewhat suddenly with "pains all over him" ten days before admission. He stated that he had been looking after a horse which was ill with influenza. He was sent to a general hospital as a case of "blood poisoning" and then to the Eastern Hospital as one of typhoid fever.

On admission the patient had a temperature of 101·4° F., the pulse was 102, and the respirations were 28. In one of the muscles of the extensor surface of the left forearm was a nodular swelling; this did not fluctuate, nor was there any inflammation of the skin over it. The left knee-joint was much swollen, very painful, and distended with fluid; the skin over it was not inflamed. The patient said that the lump in the arm had been present since Feb. 18th and the knee-joint had been affected since the 16th. The heart was slightly enlarged and there was a faint apical systolic murmur. The lungs were normal except for a few râles at the bases behind. The abdomen was natural. There were no definite signs of typhoid fever. The patient's teeth were much decayed and very foul. There were sordes on the gums and lips. The fauces appeared to be inflamed but no exudation could be seen. The tongue was fairly clean. The bowels were confined. On the next day some purulent material was obtained from the swelling in the arm and some quite clear fluid from the knee-joint. These fluids did not show any organisms on being examined. Cultivations on agar were made from the fluids by Mr. Brewer; that from the swelling in the arm gave no growth, but on the second day that from the knee-joint gave a growth of what appeared to be bacillus mallei. A day or two later Dr. Lewis drew some more fluid from the knee-joint, from which he and Dr. Wood obtained the bacillus mallei, giving the characteristic growths and reaction.

There is little to add about the patient's condition during the next few days, but on March 1st he became delirious at night and had delusions. Every night he perspired profusely. On the 2nd it was observed that the swelling in the left forearm could no longer be felt; it had not been incised. The fluid in the knee-joint had now become turbid. The right elbow was very painful and slightly red and swollen. From that day the patient became gradually worse; he became more prostrate, with subsultus tendinum and twitching of the facial muscles. The delirium was more continuous. On the 8th the left cheek became swollen and a pustule appeared on the nose. On the 9th the right ankle-joint and great toe became swollen and red and a muco-purulent discharge issued from the left nostril. During the 10th and 11th many small nodules and pustules came out on the skin of the face, the trunk, and the limbs; on the face there were about a dozen. On the 11th some of the pustules were beginning to scab. Small lumps could be felt in some of the muscles. The patient became quite comatose and died at 4.30 P.M. on the 11th. During the fortnight or so that he was in hospital there was continuous pyrexia, the temperature ranging from 99° to 105°. There was also albuminuria all through this period. During the last day the patient vomited.

Necropsy.—A post-mortem examination was made on the evening of March 11th by Dr. W. M. Robson. The body was much wasted. On the face, trunk, arms, and legs were pustules and small ulcers. Those on the face, which were the oldest, were crateriform. The swelling on the left cheek was found to be due to an abscess amongst the muscles. The right elbow contained a small quantity of pus and lymph; the left knee contained a quantity of pus and lymph but in neither joint was the cartilage eroded. Along the tendons of the peronei as they pass under the right ankle and along the dorsal tendon of the right great toe was in each case a collection of pus of a brownish colour. On cutting into the muscles of the limbs, upper and lower, many small abscesses containing thick greyish-brown pus were discovered. Many of them could be felt through the skin. There was a pustule on the soft palate. In the larynx below the right cord was an area, of irregular shape, about three-quarters of an inch square, of mucous membrane which had ulcerated. Part of the ulcerated surface had upon it some slough of yellowish colour. This ulcer was superficial. The right vocal cord was distinctly inflamed. One inch below the cords, below and in front of the ulcer was a T-shaped patch of small yellow masses of the size of millet seeds, in places confluent; a few of these extended towards the left cord. There was no pleurisy but there were numerous subpleural petechiæ. At the base of the left lung there was a nodule of the size of a pigeon's egg resembling a recent infarct. All through both lungs were small nodules of about the size of tubercles. There were signs of old tuberculosis at each apex. The heart was large and showed signs of old endocarditis of the mitral valve, the edge being thickened and presenting two or three bead-shaped projections. There were a few hæmorrhages in the epicardium. The other organs presented appearances hardly differing from the normal. In this case, also, Mr. Brewer demonstrated the presence of the glanders bacillus in the lesions of the skin and palate.

Remarks.—Perhaps the most interesting point about these cases is the diagnosis. Each of them was sent to the hospital as a case of typhoid fever. In neither instance do I think that that diagnosis was justifiable. Case 1 was sent in as typhoid fever with periostitis. The man was acutely ill and even if the abscesses had been periosteal the disease was hardly likely to have been typhoid fever, because periostitis rarely occurs in the acute stage of that disease. Intramuscular abscesses also are very rare in typhoid fever. It was the presence of such abscesses and of the pustules that led me to suspect glanders and make a bacteriological examination. Case 2 was not at all like glanders when admitted to hospital but simulated acute rheumatism very closely. Here, again, the diagnosis of typhoid fever should not have been made, arthritis being very rare in that disease. There was also one intramuscular nodule which proved to be an abscess. The man's occupation suggested glanders and hence a bacteriological examination was made. Towards the termination of the case the more characteristic symptoms of glanders appeared. This man was seen by two medical men before admission and I was surprised that his occupation had not reminded them of the real nature of the illness. The practitioner who first attended the patient sent him to the general hospital with a letter stating that the case appeared to be one of some sort of blood poisoning and mentioning the patient's occupation and the fact of his attending sick horses. But the medical officer in the out patient department sent him on to the fever hospital as a case of typhoid fever. Both cases illustrate the value of bacteriology as an aid to diagnosis.

Curiously enough, in neither case was the exact source discovered whence the patients contracted the disease, though both were investigated by the officials of the London County Council, to whom they were notified. There were 24 horses in the stable in which the patient in Case 2 was employed. Though some of these animals were ill not one

presented signs of glanders or reacted to mallein. There had been a case of equine glanders in the stables in March, 1904. Lastly, in Case 2 ulceration of the larynx was found, a lesion which, so far as I can ascertain from the literature on the subject I have at hand, is very rare. The lesion was quite recent and acute and was not apparently connected with the old healed tuberculous lesions found in the lungs.

Homerton, N.E.

SYPHILIS OF THE THIRD GENERATION

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THE hereditary transmission of syphilis to the third generation has recently been the subject of prolonged and careful investigation by several of the leading continental syphilologists. In this article I propose to give a digest of the evidence on this important subject with the aid of an illustrative case. This case was kindly put at my disposal by Mr. Albert Lucas of Birmingham and appears to be one of transmission to the third generation, although there are obvious possible objections as in most of the cases published. The grandmother has the scars of multiple gummata about both knees. The mother at the age of 16 years had a gumma of the popliteal space and extensive destruction of the palate leading to constriction of the naso-pharynx. She married at the age of 19 years and had three children but no miscarriages. The first child, the case in question (third generation), has distinct saddle-nose deformity and frontal bosses but no other dystrophic stigma of hereditary syphilis. The second child died at the age of three years from "bronchitis"; the third child is said to be healthy. The father was not examined.

The possible flaws in the evidence in this case are: (1) acquired syphilis in the mother; (2) reinfection of the hereditarily syphilitic mother; (3) acquired syphilis in the father; and (4) the intervention of another syphilitic genitor. 1. In the absence of obvious signs of hereditary syphilis in the mother it is impossible absolutely to exclude acquired syphilis but extensive or advanced tertiary syphilis at the age of 16 years is strongly in favour of the hereditary disease. 2. Re infection of a hereditarily syphilitic subject with acquired syphilis is known to occur and, according to Finger, the immunity conferred by the hereditary disease ceases at about the age of puberty. This re-infection of heredo-syphilis with acquired syphilis is called by Tarnowsky "binary syphilis," and according to him has a more disastrous effect on the offspring than the transmission of ordinary heredo-syphilis to the third generation. The evidence in the present case is in favour of pure transmission since the lesions in the child are exceedingly mild and also the mother has shown no evidence of acquired syphilis at any time. 3. Syphilis of the father cannot be excluded as he was not examined; but paternal heredity being apparently a well-established fact, in spite of the recent objections to the theory raised by Matzenhauer, it would be possible for a syphilitic father to beget a syphilitic child with a hereditarily syphilitic mother. 4. The same would apply to another syphilitic genitor in the case of the husband being free from syphilis. The possible intervention of another genitor is always a stumbling block in the elucidation of the problems of heredity, for although a child is obviously the offspring of his mother paternal parentage is usually incapable of scientific proof. Taking an all-round view of the case, and considering that all three generations were under observation by Mr. Lucas for some years, it appears to me that this case can be regarded as one of probable transmission of syphilis to the third generation.

I now propose to consider the evidence recently accumulated by the chief investigators of this subject. Professor Alfred Fournier, in his book on "L'Hérédité Syphilitique," 1891, remarks: "The hereditary transmission of syphilis to the second generation is a possible fact, rationally acceptable in principle but one the demonstration of which has not been irrefutably established." By second generation he means second heredity—i.e., third generation of the disease. Boeck has reported three cases observed at the clinic at Christiania. In the first case the grandmother was treated for secondary syphilis in 1854; the mother in 1860 for hereditary syphilis at the age of two years; the child in 1889, when four months old, for typical hereditary syphilis, with coryza, palmar and plantar syphilides, &c. The mother at this time showed scars about the mouth and Hutchinson's teeth but had no sign of acquired syphilis. The father was examined but showed no sign of syphilis. The child in question was the second, the first being healthy. Also there was another healthy child begotten by another father a year before marriage. The objection in this case is, of course, the possibility of paternal heredity and of the first child after wedlock being procreated by the same father as that of the child born before marriage; in other words, the syphilitic child might have been procreated by the father by paternal heredity, while the first two children were the offspring of another man. However, according to Fournier, cases occasionally occur where healthy children precede syphilitic ones. In Boeck's second case the grandmother was treated in 1873 for primary and secondary syphilis. After this she had one stillbirth and three living children. The eldest of these came to the clinic in 1897 with her own child suffering from hereditary syphilis. The mother had scars about the mouth but no other sign of hereditary syphilis. The father was not examined. In the third case the grandmother had tertiary syphilis; the mother had scars about the mouth and Hutchinson's teeth; the child, aged five months, had hereditary syphilis. In this case a second child was born with the hereditary disease.

A report on the subject of transmission to the third generation was presented last year to the Société de Dermatologie et Syphilographie at Paris by Edmond Fournier. He discussed the two questions whether there is transmission of virulent syphilis to the third generation or only the dystrophic effects of hereditary syphilis. He gives the following case in support of the transmission of virulent syphilis to the third generation. A man, aged 24 years, presented the scar of a tuberculous syphilide of the thigh which originated at the age of five years. He had also optic neuritis, diffuse retinitis, and ichthyosis. His father had marked signs of hereditary syphilis—signs of old keratitis, notched teeth, deafness, &c. The grandmother had acquired syphilis contracted by suckling a syphilitic infant. She died from hemiplegia. In this case the subject had both dystrophic and virulent signs of hereditary syphilis. Fournier regards this case as free from any possible flaws. He has collected 116 cases published, 59 of which fulfil all the conditions required for transmission to the third generation. In these syphilis began in the grandparent and was transmitted to the children and grandchildren. He concludes (1) that there exists a syphilis of the third generation; (2) that this is rarely observed in practice because of the attenuating influences of time and treatment; and (3) that it manifests itself usually by dystrophic stigmata resembling those of hereditary syphilis, but that virulent symptoms may occur in about 14 per cent. of the cases.

Tarnowsky has made a comprehensive study of the subject, based on prolonged observations during many years; his conclusions may be summed up as follows: 1. Syphilitic heredity manifests itself in three ways: by manifestations peculiar to hereditary syphilis, by dystrophic influence, and by an acquired immunity. 2. It is in the second generation of the syphilitic family that the hereditary influence of acquired syphilis declares itself with the greatest intensity in causing a considerable number of abortions, stillbirths, infants who succumb after several months of existence, and infants afflicted with signs of hereditary syphilis or different dystrophies. 3. Immunity of the second generation (Profeta's law) is generally only temporary. 4. The influence of syphilitic heredity diminishes sensibly in the third generation. This attenuation shows itself in the diminished number of abortions, stillbirths, and infants who die early; by the absence of phenomena in the third generation; and by the considerable diminution in the number of dystrophies, as well as their qualitative attenuation. 5. Acquired syphilis of the first generation is not transmitted to the third in the form of the active manifestations of hereditary syphilis. Syphilitic heredity descending from the second to the third generation manifests itself exclusively by a dystrophic influence. In other words Tarnowsky does not support the transmission of what E. Fournier terms virulent syphilis to the third generation. 6. Transmission from the grandparents to the grandchildren by skipping a generation when the second generation have escaped syphilis has not been proved and

it is doubtful whether it occurs. This view is also held by Alfred Fournier. 7. The dystrophic influence of acquired syphilis is not in proportion to the severity of the lesions; but the dystrophic influence of the second generation corresponds generally with the degree of the degeneration in the genitors. 8. When the second generation is not affected with the symptoms or dystrophies of hereditary syphilis it generally produces a healthy progeny. 9. Dystrophies of the second generation are not transmitted in the same form to the third generation. 10. Lesions of hereditary syphilis in the third generation (virulent adhesions of E. Fournier) occur when there is new syphilitic infection of the second generation; to this Tarnowsky gives the name *binary syphilis*. This may also occur when a representative of the second generation marries a subject with acquired syphilis. 11. Binary syphilis exerts on the third generation a much more fatal influence than syphilis of the first on the second generation. There are a greater number of abortions, stillbirths, and early deaths, and the proportion of hereditary syphilitic phenomena and dystrophies is increased. Binary syphilis is one of the principal causes of the rapid degeneration of the population of country districts. 12. The supposed progressive attenuation of syphilis in proportion to the syphilisation of the population is not supported by fact. 13. The fatal hereditary influence of acquired syphilis of the first generation manifests itself with the greatest intensity in the second generation, diminishes considerably in the third, and becomes absent in the fourth generation. Syphilis has an incomparably more fatal influence on the species and on society than on the individual.

The dystrophic stigmata which occur in both the second and third generations, according to E. Fournier, include a formidable list of affections. He mentions senile physiognomy, infantilism, cranial malformations, including asymmetry, synostoses, microcephalus, and hydrocephalus; dental and maxillary dystrophies, including micro-lonti-m, displacements, dental erosions and malformations of the jaws; hare-lip, cleft palate; ocular and aural dystrophies, including colobomа, strabismus, and malformations of the external ear, especially in form of satyr or fawn; spina bifida and scoliosis; dystrophies of the limbs, including partial giantism, polydactyly, syndactyly, congenital dislocation of the hip, and club-foot; cerebral dystrophies and anomalies of the spinal cord and deaf-mutism; cardiac and vascular anomalies, congenital cyano-is, Raynaud's disease; imperforate anus and hernia; ectopia vesicæ, epispadias; uterine and vulvar anomalies, atrophy of the testis and hypospadias; ichthyosis, nævi, sclerodermа, and dermoid cysts; monstrosities, exomphalos, anencephalus, meningocele, &c.; retarded intellectual development and idiocy; hæmorrhagic diathesis and paroxysmal hæmoglobinuria; epilepsy, hysteria, Little's disease, Friedreich's disease, &c.—a truly imposing list. In some cases, no doubt, the dystrophies may have been due to other causes and accidentally associated with the syphilitic taint but the coincidences of these effects with syphilitic parentage are numerous enough to affirm a relation of cause and effect.

Transmission of syphilis to the third generation formed the subject of a discussion at the Paris Congress of Dermatology and Syphilis in 1900 and evidence in favour thereof was given by Jullien and others. Barthelemy, at the Moscow Congress in 1897, had previously given an account of the history of hereditary syphilitic subjects, tending to show that the disease is transmitted to the third generation. He regarded syphilis, either by itself or by heredity, as one of the most active and rapid factors in causing degeneration of the human race.

Professor Finger at the Paris Congress mentioned the following objections which could be raised against transmission to the third generation: (1) the possibility of acquired syphilis in the second and third generations; (2) the symptoms should appear at birth, as late tertiary signs might be due to acquired syphilis in infancy; and (3) the dystrophies, if syphilitic in origin, should appear together with the usual signs of hereditary syphilis, but as a rule they occur separately.

Conclusion.—Such is the evidence up to the present time concerning the transmission of syphilis to the third generation. The question cannot be solved like a problem in Euclid, and a broad and commonsense view must be adopted, based on the evidence as it stands, supplemented by probabilities. Human beings cannot be kept under constant observation while breeding, like animals, and therefore absolute elimination of all the possible flaws in the evidence is impossible. Also it is the good fortune of few of us to be able to follow up for three generations so many cases as Tarnowsky has succeeded in doing.

I think we must conclude: 1. That the degenerative or dystrophic effects of syphilis are transmissible to the third generation and possibly further, only to die out with eventual sterility. 2. That, although difficult to prove, the transmission of virulent hereditary syphilis to the next generation is scientifically possible; the question depending chiefly on the two factors of *time and treatment*. We know that the signs of late hereditary syphilis may be delayed till the procreative age; hence a hereditarily syphilitic genitor in a virulent state might transmit the disease in a virulent form to the offspring. The reason why such cases are rare is the fact that a small proportion of cases marry while suffering from hereditary syphilis in a virulent form. At the time of marriage the disease is usually attenuated by time and also by treatment if this has been adequately administered. 3. That reinfection of a hereditarily syphilitic genitor increases the virulence of the disease and its fatal effects on the offspring (binary syphilis of Tarnowsky). 4. That the two chief obstacles to actual proof of transmission to the third generation are the possible reinfection of the second generation and the possible intervention of another syphilitic genitor.

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Birmingham.

RUPTURED INTERSTITIAL PREGNANCY; ABDOMINAL HYSTERECTOMY; DEATH.

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A WOMAN, aged 30 years, the mother of one child 17 months old, ended her last period on Dec. 30th, 1903. On April 14th, 1904, about 8 P.M., she was suddenly seized with pain in the abdomen, faintness, and vomiting. At 2 A.M. on the 15th she sent for her medical attendant who gave her a hypodermic injection of morphine to relieve pain. Throughout the 15th she was in great pain, collapsed, and unable to retain any nourishment. Vomiting continued throughout the 16th. On the 17th I saw her in consultation on account of the frequent and uncontrollable vomiting. She was a big, strong, well-nourished young woman with an exceedingly blanched and pinched face, the aspect of abdominal disease being well marked. Her temperature was 100° F. and the pulse was 140. The latter was very weak and thready. She complained of great pain in the abdomen and of excessive thirst. She was restless and sweating. The abdomen was much distended and none of its contents could be felt. There was dulness in the flanks. Bimanual examination was unsatisfactory owing to the great abdominal distension but on vaginal examination the uterus felt crowded down and somewhat fixed. The os was patulous and the cervix was soft. The uterus itself was enlarged and around it was a softish fulness. There was no hæmorrhage from the os nor had there been any. I diagnosed "ruptured tubal gestation" and advised operation as soon as the necessary arrangements could be made. Consent was obtained and the same afternoon I opened the abdomen and found the lower part full of clotted and fluid blood. The intestines were much distended. The uterus was sought for and when brought into view a large rent was seen in the fundus, from which protruded membranes and clot. The fœtus was found lying loose in the midst of coils of intestine. Owing to the apparent impossibility of closing the large tear in the uterus and stopping further hæmorrhage I decided to remove that organ by the supravaginal method. This was accordingly done, the blood and clots were cleared out, and the abdomen was closed. The patient stood the operation fairly well. Shock was combated by saline and nutrient rectal injections and strychnine subcutaneously. For about 24 hours progress was good, but then there was a return of vomiting with a rise of temperature, and death occurred at 2 A.M. on April 19th.

FIG. 1.

External view of the parts removed. The length of the uterus was about six inches and the width at the level of the Fallopian tubes four inches. At the fundus uteri the rent in the uterine wall is well seen and the interior of the sac containing the fœtal placenta is exposed to view. The fœtus, which was about six inches long, was of the size of a fœtus at the end of the fourth month of gestation. A. Left Fallopian tube. B. Right Fallopian tube. The uterus has developed unsymmetrically owing to the extra growth on the side of the gestation.

FIG. 2.

The uterus bisected laterally. C, Fœtal placenta. D, Uterine decidua still *in situ* and separated from the fœtal sac by a bridge of uterine tissue.

Remarks.—This case is interesting for several reasons. It is an example of interstitial pregnancy, the rarest form of extra-uterine gestation. Apparently the ovum became delayed in the left Fallopian tube, where it passes through the uterine wall, and as it developed caused hypertrophy of the uterine tissues above the entrance of this tube. This gives the uterus a lopsided appearance. The uterine tissue was thinnest on the abdominal aspect of the gestation sac, so that when rupture took place it occurred into the peritoneal cavity. Fig. 2 shows that the uterine decidua is intact and that uterine tissues exist between it and the sac. There was no separation of the uterine decidua and this accounted for the absence of vaginal hæmorrhage, so that there was nothing suggestive of an ordinary miscarriage. As a matter of fact, the patient had attempted to produce abortion on the evening of April 14th, using the handle of a paint brush, but she does not seem to have succeeded in entering the uterine cavity. This information was obtained after death. It is probable that these manipulations set up contractions which ended in rupture of the sac. The date of rupture, the 106th day after the end of the last period—i.e., 15 weeks—is late for the rupture of an ordinary tubal gestation, which usually occurs between the eighth and twelfth weeks, but when the pregnancy is interstitial the date of rupture is delayed sometimes to the sixteenth week. In cases of ruptured interstitial pregnancy, owing to the severity of the bleeding death usually occurs in a few hours but in this case 68 hours elapsed before operation and 34 more before death.

With regard to the treatment adopted in this case, after examination of the specimen I am not sure whether it would not have been wiser to have removed the fœtal placenta and then to have sutured the tear in the uterine wall, but when the uterus was in the pelvis this did not seem feasible on account of the apparent size and irregularity of the rent in the uterus. At that time I was also in doubt whether there was a communication with the interior of the uterus. Bland-Sutton in his paper on Hysterectomy at the annual meeting of the British Medical Association at Oxford, July, 1904, said: "In cases of interstitial or tubo-uterine pregnancy in which the gestation has gone beyond the second month the uterine tissues are so intimately incorporated with the gestation sac that the operator who is called upon to deal with hæmorrhage due to rupture of the sac will find it—i.e., hysterectomy—the only expedient open to him in the majority of cases." The fatal result in my case can hardly be attributed to the method of operation adopted but to the time that had elapsed since the onset of the symptoms.

Bedford.

NOTES ON ABDOMINAL SURGERY BASED UPON COMPLETED RECORDS OF 744 CASES.

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(*Concluded from p. 517.*)

So far I have written of those conditions of abdominal surgical work which are met with in women only. Before turning to others common to both sexes there is one more which it is necessary to mention.

Retroflexion, prolapse, and procidentia are conditions which every medical man encounters in practice and naturally a large number of cases constantly present themselves in hospital work. Until lately I have found them very difficult to treat satisfactorily. Pessaries are useful in certain cases but I have nothing original to say about them. In most of the cases which come to hospital every variety has been tried and found wanting, though here and there a variation in size or shape or possibly mode of placing may succeed. The great majority need some operation in order to restore them to comfort. Alexander's operation, which I had the privilege of being taught by the originator, has served me well in cases of uncomplicated retroflexion when carried out according to the directions and with the precautions upon which that able surgeon lays stress; but even in these cases it is sometimes disappointing not so much from any difficulty in finding the round ligaments, which can hardly be missed if his very clear directions are followed

but because of the varying development and strength of these structures, as to which the operator is entirely ignorant until he finds them yielding during the process of drawing upon them. I find myself relying less and less upon this method. In cases of prolapse and *a fortiori* procidentia, I cannot see that it is of any practical use. It is impossible by this means to do more than raise the fundus to a level with the upper edge of the pubic bone, whilst the uterus must be left directly in the line of the pelvic outlet and sooner or later will re-descend.

All the various operations for ventrofixation and ventrosuspension I have tried many times but they are all open to two grave objections. The former absolutely fixes an organ which should be mobile; the latter very often yields, so that the final result is not much of an improvement upon the original condition; whilst there is more than a risk that intrapelvic bands may be formed later under which intestine may be caught and imprisoned with all the evil results consequent upon such an accident. Besides, the strain is upon the upper segment of the uterus and such operations do not reproduce the normal position of the uterus, with its cervix directed backwards towards the sacral cavity and the resulting angle with the vagina. I have lately written so much on this subject when recommending an operation of my own for reproducing the sacro uterine ligaments[1] that it is unnecessary to emphasise any further any of these points here; but the latest improvement I have seen, and as to the success of which I wish to bear willing testimony, is that introduced, so far as I know, by Dr. A. Donald of this city and which he has been kind enough to demonstrate to me. After assuring the healthy condition of the uterus, if required by curetting and other measures, this operator everts the procident uterus and performs an anterior colporrhaphy if required; but in some instances, if there is marked retroflexion, he separates off the bladder by an anterior colpotomy. When the vesicouterine pouch is reached this is divided and the flap which then exists on the anterior surface of the uterus is drawn down and fixed to the vaginal wall. This insures the correction of the retroflexion. The raw bladder base becomes adherent higher up to the anterior wall of the uterus and its peritoneal edge consequently to a line nearer to the fundus uteri. This insures the maintenance of this correction. It will be noted that this proceeding is quite different from the operation of Dührssen, who fixes the fundus uteri to the vaginal wall in front, a method which I have once followed but never intend to repeat. Both these operations are, of course, only done in cases where they appear to be indicated. But in all such cases the vagina is then narrowed by a posterior colporrhaphy which starts immediately behind the cervix and is continued downwards to the fourchette. The denudation and progressive suturing go on *pari passu* and are so planned that the result is that not only is the vagina narrowed but the lower pole of the uterus is pushed upwards and backwards into its normal relation with the sacral cavity, where it is maintained. My experience of this operation, or rather series of operations, leads me to believe that in the majority of such cases it will take the place of all others, including my own. Of these operations, including Tait's perineorrhaphy, colporrhaphy, Alexander's and its various modifications, ventro-suspension, ventrofixation in all their varieties, my own, and Dr. Donald's methods, I have had 78, with two deaths—one following Tait's method and due to septic phlebitis in 1896; the other a case of ventro-suspension following removal of a large cystic ovary in 1896. Since that date I have been fortunate in having no fatality.

Hernias of the intestine.—From the above conditions, which are essentially various grades of hernia of the uterus, the transition is natural to hernias of the intestine. Of all kinds of intestinal hernias I have operated upon 184, divided as follows:—

Chronic inguinal hernias (for radical cure)	6
Strangulated ,, ,, ...	10
Congenital ,, ,, (for radical cure)	20
Umbilical hernias ,, ,, ...	24
Femoral ,, ,, ,, ...	23
Ventral ,, ,, ,, ...	26

The small number of strangulated cases is due to the fact that unless something unusual was noted in the case it was dealt with at once by the resident surgical officer. The other cases were all brought for the purpose of having the operation for radical cure performed.

When this work was commenced it was the fashion to speak very hopelessly as to any chances of success. Birkett, in "Holmes's System of Surgery," devotes a paragraph or two to "the so-called radical cure of hernia." Sir W. Mitchell Banks said that all the victims of this condition were persons of lax muscular fibre and patent abdominal orifices. Now, said he, "as you cannot hope by any operation to make a man better than he was before the condition arose, when you have done all you can you must still leave him a man of lax muscular fibre and with patent abdominal orifices and such a man ought always to wear a truss." This was, generally speaking, the attitude of surgeons at that time. Operations were mainly done in order to enable a man to wear a truss who previously had so large a hernia that a truss could no longer control it. But we have progressed since then and now I suppose no one will deny the possibility or probability of obtaining a trustworthy and truly radical cure in properly selected cases. The main reason, as it seems to me, for non-success in the past was the fact that all herniæ were attributed to rupture and, as that name implied, to the action of a single sudden strain which the patient's tissues were congenitally too weak to bear and the total ignoring of the true cause, which I believe I was one of the first to point out—the persistent, constantly repeated, and comparatively gentle intra-abdominal increases in tension due to cough or tenesmus from piles, stricture, and the like diseases. Many patients presented themselves whose muscular condition it would have been ridiculous to call congenitally feeble. A closer examination of the causes always put forward to account for it showed that they could by no possibility be regarded as the real effective ones. For so long the doctrine had been accepted that some accident must have been the determining cause that some patients half apologised for the fact that they could not remember any. Others ransacked their memories until they remembered some incident of the kind occurring 15 or 20 years earlier and gave it so glibly that only careful cross-examination elicited the space of time which had elapsed between the fall or strain and its supposed result. Investigation on these lines showed conclusively that we had accepted statements by patients which were not trustworthy and that the attention of the profession generally had been directed to a wrong issue. The importance of this is obvious. If a hernia was due to persistent cough that cough might first of all be cured. If to a stricture of the urethra that might be divided. It was curious that knowing already the baneful effect of a tight phimosis in children in this direction and the necessity for its removal by circumcision before any attempt upon the hernia produced by it, which often disappeared of itself when once the straining attempts at urination were stopped, surgeons should have ignored the influence of a stricture in after life. Piles might be removed or otherwise cured. Then when once the actual effective cause was cleared away operation for the first time stood a decent chance of success. What chance could it have whilst the cause which originally produced it was still in action, even during the plastic stage of healing, gradually and imperceptibly reproducing the original condition, whilst the surgeon was wasting his time in warning his patient against exposure to possible but unlikely and problematical dangers?

In the Liverpool workhouse infirmary during the course of my investigations on this point I came across a patient who a few years before had been operated upon for double inguinal hernia by Sir W. Mitchell Banks. This may very well have been one of the cases upon which he relied for the support of the pessimistic view that he held on the subject. Within six weeks after the operation the condition returned and when I saw the patient he was, if anything, worse than before. Could the result be wondered at when he was slowly dying from chronic bronchitis and asthma, from which he had suffered constantly for 40 years? But if one of these causes is in operation and cannot previously be eliminated I conceive it is imperative that operation should be refused. It can do no good and its performance can only smirch the reputation of the operator and, what is perhaps of more importance, that of an operation which in happier circumstances is capable of so much benefit and of such excellent results.

A later theory has been propounded as to the course of these cases. It is suggested that in all cases of hernia a congenital prolongation of the peritoneum exists, lying dormant, so to speak, until a strain forces a loop of intestine or a portion of omentum into it; that all cases of hernia, in fact, are in reality congenital. I should be

[1] British Gynæcological Journal, February, 1903.

loth to deny the possibility of such a condition in certain cases but, putting aside the fact that demonstrably congenital cases are admitted to exist, the structure and anatomy of the sac of which differ entirely from those present in the acquired cases, one would like to ask those who uphold this doctrine whether they have ever watched the slow development of a hernia until it becomes scrotal and after its progress has become evident. What reason is there for thinking that the stage before the appearance of the protrusion outside the external ring differs in any way from that of the same sac after it has reached the cellular tissue outside the ring? Why must we predicate a pre-existing sac up to that point and not beyond? What evidence is there in the majority of the cases which we see and recognise as acquired that up to the time of their emergence they were produced in one way and that all further development which appears to be continuous is suddenly caused by a totally different factor? We know by everyday observation that peritoneum is capable of enormous dilatation if slowly and persistently acted upon from within; that persistent, gradual, gentle force will produce dilatation and smooth yielding of the more resistant fibrous tissues without, whilst sudden force will either tear these tissues or, by driving the bowel between them before they are dilated, produce strangulation of the gut from the compression which they are capable of exerting upon it. The supposition of a congenital canal of peritoneum does not explain the yielding of the muscular and fibrous walls around and only half the difficulty therefore is accounted for by such a supposition, for which, as it seems to me, there exists no substantiating data at all. However that may be, there can be no doubt that we can, and do, obtain at present results which are permanent. The following case, amongst many others, is good evidence of that fact.

CASE 55.—The patient, a male, aged 20 years, was admitted to hospital on April 5th, 1891. He had a right inguinal congenital hernia. Associated with this was a tendency to retraction of the right testis which slipped up into the canal when the hernia was returned. The canal was widely dilated. There was no cough, stricture, or hæmorrhoids present. Operation was carried out on April 7th. The testicle was drawn downwards and fixed in the scrotum by a suture at its base. The rest of the operation had nothing distinctive. The patient left the hospital well on May 1st. 11 years later (August 28th, 1902) he came to report. He had enlisted in a foot regiment in 1893 and had seen service at Gibraltar and in India. He was at the time of his giving this report just invalided home from the latter place on account of rheumatism in the right shoulder. The hernia had never given him the least trouble, though he had undergone the usual amount of marching and hard work. The right testicle was in its normal position. It was rather smaller than the left but was mobile and healthy. There was not the least impulse on coughing.

Femoral hernias have been now for some years treated by the Watson Cheyne method, which represents, so far as I know, the best advance that has been made in their treatment. The pectineal flap raised from that muscle and brought up and under Poupart's ligament forms an ideal method of closure of the femoral ring and my immediate and late results have been exceedingly satisfactory.

There is an unusually large number of ventral hernias. These for the most part have followed abdominal sections. Nothing can be more annoying to a surgeon than this sequel to an otherwise successful abdominal operation and for a long time I sought more or less vainly for a means by which they might be prevented. A consideration of the muscular forces acting on the abdominal wall showed conclusively that both sides were antagonistic to one another; that when united, as normally was the case, their combined action drew their central line backwards towards the spine; but that when their combined tendon, the linea alba, or any line on either side of it was divided vertically each set tended still further to widen the opening. The earlier method of through-and-through suturing left it a matter of chance whether in the line of reunion fascia was opposed to fascia or to fat. If at any point the latter should be the case no firm union could be expected. A weak spot would be left there which only wanted time and persistent contraction on the part of the muscles attached to the fascia slowly to widen and permit of the egress of omentum followed by intestine. A tendency set in in the reverse direction and surgeons not merely united peritoneum, fascia, and skin separately but even put a layer of sutures in subperitoneal and subcutaneous fat. This was needless and harmful, for fat is, of course, only a lowly vitalised collection of cells containing oil. Once these cells were penetrated by a suture that suture became a seton soaked in oil which was bound to be thrown out sooner or later. Gradually it was recognised that the fatty layers could be left to look after themselves, if only the firmer layers were perfectly united by some material which would stand the strain of the vomiting that so frequently follows anæsthesia and which would remain firm until the plastic lymph thrown out between these layers had thoroughly united them. Thus the whole question narrowed itself down soon mainly to a choice of suture material and the way in which this should be placed. The fascia was the most important structure of all. It was not fascia in the ordinary sense of the word; it was tendon, a membranous expanded tendon, acted upon by its own muscles. At first care was simply taken to unite its edges, but if there was much tension upon them the sutures would sometimes cut through and the old weak spot would be left. Marcy's proposition to unite the overlapped borders seemed to overcome this difficulty, and his mattress sutures left no part unsupported. But such sutures had to be buried. If their ends were brought outside and tied over the skin or over gauze with a view to later removal, this was satisfactory enough if there were little or no subcutaneous fat. If, as often happened, this layer was thick the pressure of the suture caused rapid absorption of the parts pressed upon and the suture became loose and useless. In the majority of cases the sutures must be buried. What, then, should this suture be made of? At first I used catgut but the methods of sterilisation of this material in the early "eighties" and even "nineties" left much to be desired. Ghastly stories of the inclusion in it of tetanus spores in certain cases were afloat. Although I have never seen a case of this kind the dread of it was always present and several times stitch abscesses occurred after its use. Later, formalinisation was proposed but the strength of the solution at first used was too great and the catgut became so brittle that it would scarcely bear the strain of tying. Kocher, too, wrote against catgut and for some time its place was taken by silk. For some surgeons silk is still the ideal material. I had the privilege of watching Professor J. W. Taylor of Birmingham during the last year and he used extremely fine silk, such as is used by ophthalmic surgeons, for uniting the fascial edges. This, however, he reinforces by stronger sutures which penetrate the muscular wall at a distance, are tied outside, and removed later. This is an extremely good method and in his hands gives perfect results, but in mine silk has not been a success. It has more than once had to be removed later from a sinus formed over and around it. I do not like these through-and-through sutures. They frequently cut the skin of my patients and their points of exit become infected with the staphylococcus albus and occasionally the aureus. Such infection travels along the track of the suture and they must then be removed, whether their period of usefulness is over or not. To trust to the fine silk suture alone seems to me hardly safe during the paroxysmal vomiting which often follows anæsthesia. Possibly Lancashire skins differ from those of Warwickshire. Then silver wire suggested itself as the one thing needed. It was aseptic and even was said to be antiseptic in its action. It certainly could be trusted to hold the tissues together and would bear almost any strain. But it, too, was not perfect. If the ends after twisting together were not bent down exactly parallel to the muscular fibres below, the contraction of those fibres in after days produced unpleasant pricking sensations. Moreover, once in they were there for life; they could never become absorbed. They might certainly be applied as a figure-of-8, the lower loop grasping the fascia, the upper inclosing a wider span of skin and subcutaneous tissue, but the removal of such sutures was often the most painful experience that the patient had to undergo Moreover, they also had a tendency to cut through the skin. Silkworm gut, though it had the advantage of more easy removal, did not fix the fascia so satisfactorily, since the tension of the lower loop depended on that of the whole suture, and if the subcutaneous fat was thick it was quickly cut through until all tension was lost and its fixing power of the fascia went with it; and if buried its ends, which would not lie down, pricked even worse than did those of the wire.

Milton's method of lockstitch promised at first a ready method of safe union and an equally easy method of removal when its time of usefulness was over. Theoretically it was

perfect but in practice it was almost unworkable. The secondary thread was of silk, silkworm gut, or silver wire. When the primary loops were drawn taut, however firmly the secondary thread was held, the former tended to produce small bends at the points gripped which transformed the originally straight line into a more or less fine zigzag. When, therefore, the secondary thread came to be removed these little bends caught in each successive loop of the primary thread and become locked. To loosen them it was necessary to use such force as tended to open up the wound once more, or at least to produce a tube filled with decomposable clot which, should it become infected, might, and did in one case, cause a subcutaneous abscess. It was obviously impossible to remove the primary thread first. But the plan seemed too good to be discarded and by dividing the primary into separate loops each of which might be removed separately, leaving the secondary thread free, this difficulty appeared to be overcome. I have already described the manner in which this was done in a paper which appeared in the *British Gynæcological Journal*,[1] to which I must refer those who are interested. During all this time, however, many improvements in the preparation of catgut had been introduced, and having at last obtained what appears to be a trustworthy method of sterilisation I have returned to the use of this material almost entirely. It is after all the ideal substance. It can be made of sufficient strength to fulfil all the purposes for which it is needed. Mr. Rutherford Morison, indeed, uses it in sizes I have never yet dared to use, No. 7 or 8. I had the very great pleasure of seeing him operate at Newcastle on several cases and his faith in it decidedly confirmed my own beliefs. For ligatures I have used it as prepared by Professor Clarence Webster of Montreal; for sutures by the later formalin method of Frederick. The cardinal advantage I conceive to be that when once it has fulfilled its duty it becomes entirely absorbed and so after a definite time there is left no foreign body in the wound. Nothing remains that by any possibility can give trouble in after years; nothing but the patient's own tissues. The surgeon has also the immense satisfaction of knowing that there will be no need to hurt his patient during convalescence; that once his operation is done it is finished with.

It may be thought that I have dwelt at too great length upon a trivial detail, but if I have learnt anything in surgery it is that success depends upon attention to just such details; and no one who has had, as I have, to work for a long time, patiently dissecting out pocket after pocket of errant peritoneum, each filled with its little bunch of omentum in a layer of subcutaneous fat one or two or more inches thick, but will look with dismay at a ventral hernia which has existed for more than a year or will consider it too much trouble to do everything in his power to prevent its occurrence. There is, besides, a great tendency on the part of patients to allow such things to drift. After undergoing a serious abdominal operation they think but little of a small weak spot or a slight protrusion in the line of the scar. They will do anything rather than face a second operation. They will wear belts, bandages, pads, anything which gives them a feeling of support, whilst all the time the hernia is slowly but persistently forcing its way in all directions in their subcutaneous tissues.

I cannot leave this subject without noticing the tendency increasingly evident of late years towards curvilinear transverse incisions in place of vertical. It may be that it is in this direction that we must look for improvement but my experience of them at present is not sufficient to warrant any positive statement on my part. Dr. A. J. Wallace of Liverpool speaks highly of the method in the hypogastrium for pelvic work and Mr. Rutherford Morison of a similar but unilateral incision in the right hypochondrium for biliary affections. I have seen it advocated in the right iliac region for appendicitis. Further trial will show whether it is more suitable. Theoretically, there appears to be a good deal to be said both for and against these methods.

So much for hernias. These naturally lead to other *operations on the intestine*. As I have in my introduction to the discussion on enterorrhaphy at the Swansea meeting of the British Medical Association, 1903, already given a list of all my cases, with the exception of five which occurred since, it is not necessary now to say more about these.

Of *operations on the appendix* I have had 24 with four deaths. All of these fatal cases were, of course, due to sepsis and followed general infection of the peritoneum from the bursting of abscesses around a perforated appendix. As is the experience of every abdominal surgeon I have never seen a death after an operation during the quiescent period. I think that if the dangers of operation delayed until perforation has taken place and the enormous contrast between the fatality in these cases and of those operated upon between attacks were properly appreciated by the public we should soon see the last of such catastrophes. The last patient upon whom I operated had one large pool of pus in the pelvis and another beneath the liver, whilst lymph and pus were widely distributed amongst all the intestinal coils. She died two hours after an attempt to set up efficient drainage.

The various positions which an appendix may assume under certain conditions are wonderful. I have already mentioned one case in which its tip was adherent to the angle formed between the uterus and a *left* pyosalpinx. In another case an enormously elongated hypertrophied appendix lay over a parovarian cyst to which it was firmly adherent. In a third case it was buried beneath an ascending colon. The tip had perforated and an abscess had formed around it. This was opened from the outer side of the colon and drained, Jan. 1st, 1905. The patient was in the fifth month of pregnancy. No interference with the pregnancy took place and she was safely delivered at term of a fine child. The patient was a primipara and was under the care of Mr. M. Duggan of Bowdon who also attended her in confinement. Mr. Duggan lays stress upon the fact that at the time of confinement the abdominal wall was strong and stood the strain of the pregnancy well. Both mother and child, he reports (July 1st, 1905), are doing well.

Of *intussusceptions* I have only seen six. One of these I will give in detail.

CASE 523.—The patient, a male, aged eight years, was admitted to hospital on March 18th, 1903. On the morning of that day, on rising at 8 o'clock, the child had complained of severe paroxysmal pain in the abdomen. The bowels had been moved at 8.30 A.M. After an enema given at 3 P.M. a hard lumpy stool was passed but without blood or mucus. The patient was admitted at 10.15 P.M. The abdomen generally was supple. A mass of the size of a Tangerine orange could easily be felt when the child was crying in one of the paroxysmal attacks of pain in the right umbilical region. The mass was smooth and mobile with rounded surfaces and outlines; it was very tender, but was clear on light percussion. The finger introduced into the rectum was stained with blood on withdrawal.

Operation was proceeded with at 10.45 P.M. A vertical incision was made in the right rectus. Beneath the omentum at this point was a greatly distended coil of small intestine, ending in the mass which had been felt. Distally from the same mass issued a collapsed section of bowel. Attempted reduction failed. The bowel was apparently locked inside. Maunsell's method of excision and enterorrhaphy was adopted. After incision into the fundal line of the intussuscipiens the returning layer was found to be stretched over something still more interior. On cutting through this layer in the same line another coil was found continuous with the collapsed bowel outside. In this coil a small hard mass, which proved later to be a fibroma of about the size of a marrow-fat pea, was found in the wall of the gut. When that was excised the invaginated intestine was easily drawn out. Two openings required suture. This was done by double layers of fine silk sutures *à la* Lembert. The entering intestine, especially the second loop, was much congested and in patches looked as if stasis of the blood current had occurred but douching with hot saline solution improved this so much, and the peritoneal coat appeared so nearly normal, that the bowel was replaced and the abdomen was closed. All went well at first. Flatus was passed the next day and a stool on the second day. On this day there was evidently painful peristalsis at times but this passed off and by the 30th the patient appeared quite well, the abdominal wound having healed by first intention. On April 5th, however, he suddenly complained of pain and then vomited. The bowels were moved but the face became pinched and pale. No fresh lump could be felt in the abdomen which was perfectly supple. The temperature was 101·6° F. At noon on the same day the abdomen was again opened. A band which was found attached to the intestine at one end and to the anterior abdominal wall at the other was divided. Another

[1] British Gynæcological Journal, August, 1904.

coil was attached to its own mesentery and was somewhat twisted; this was separated. Another tight band formed of omentum was adherent to one coil of intestine and beneath it another coil was compressed. All these bands were divided and removed and the abdomen was again closed. From this time recovery was steady and after his discharge from the hospital the patient reported himself in the following June as being perfectly well.

In all such cases I have found two points of great use in diagnosis. The first is that the mass produced is always best appreciated by the examiner during the height of the pain produced by peristalsis. The reason of this is, of course, obvious. The contraction hardens the parts involved and renders them more salient. Whilst contraction of one layer of intestine might hardly be felt, that of two superposed the one upon the other is distinctly palpable and contrasts most vividly with the rest of the abdominal contents when that contraction is most pronounced, which, of course, coincides with the time when the pain is most severe. The other point is that it is of the essence of an intussusception that pressure is exerted at its neck upon the mesenteric vessels and this pressure is necessarily more effective in the case of the veins than in that of the more resistant arteries. Whilst blood, therefore, is still being pumped into the capillaries of the part it finds increasing difficulty in the way of its return. Some of these capillaries must become over-gorged and will yield, so that blood escapes into the lumen of the gut and passes down into the rectum where it accumulates just within the sphincter. It may not be discharged in sufficient quantity to show itself outside but a finger passed within the sphincteric ring will always find it and will on withdrawal be found to be stained by it.

For *carcinoma of the rectum and sigmoid flexure*, of which I have seen 36 cases, with three deaths immediately following operation, many operations have been devised. The disease itself when occurring in young subjects is often rapid in growth but when, as in the majority of cases, it occurs after middle life its progress is often sufficiently slow that attention is drawn to it in time to allow of measures for its removal. In some, on the other hand, as in two seen lately with my friend Mr. E. E. Smith of Hyde, there appear to be few or no symptoms until total obstruction occurs somewhat suddenly followed by rapid death. Careful questioning will even in such cases generally elicit some history of suspicious symptoms, but these are often such as are not unfrequently noted in old persons the subjects of chronic constipation, and without a rectal examination might easily be mistaken for those produced by other causes. I have learnt to be extremely suspicious of all cases of hæmorrhoids and fistulæ, especially if multiple. I will presently mention a case in which hæmorrhoids were removed from a young woman who proved to be suffering from rectal cancer. In all these cases I venture to put in a plea for preliminary colotomy. This has the drawback that if successful three operations are required instead of one but the second and most important operation, that of excision, can, should preliminary colotomy have insured the diversion of the fæcal current from the parts operated upon, be carried out with so much more accuracy and be kept so much more aseptic during the process of healing that the additional time and trouble are amply repaid. Some of these cases, moreover, may prove to be obstruction from non-malignant adenoma. It is not always possible to be certain beforehand with which variety one is dealing. In such cases, as in one detailed below, the happiest results may be anticipated and it would be sad, indeed, if the success were lost simply because the parts had not primarily been made, and afterwards kept, clean. My experience of these cases has been such that at present I should refuse absolutely to operate upon a patient who would not consent to undergo this preliminary diversion of the fæcal contents of the intestine. Even in cases where the stricture is in the sigmoid, easily reachable and removeable, the distended bowel above is far more fit for enterorrhaphy when it has been thoroughly emptied by previous enterotomy. I append details of three of my cases in illustration. The first was one in which the result was a fatal one, mainly owing to insufficient diversion of this kind.

CASE 66.—The patient was 54 years of age and she was admitted to hospital on April 25th, 1892. There had been persistent diarrhœa with the passage of blood and mucus for 12 months. Pain on defæcation with incessant tenesmus had also been suffered. Per rectum, the sphincter and a space of one inch above were found to be apparently healthy; then there was a carcinomatous growth extending upwards for about two inches. The finger could be passed through this and the bowel above was found to be healthy. On May 6th left inguinal colotomy was performed. The meso-sigmoid was so contracted that it could not be brought outside. The bowel was simply fixed to the wound and was opened four days later. No proper spur therefore was formed and fæces still passed readily into the distal segment. On the 20th Kraske's operation was undertaken. As the growth had extended downwards, the whole lower portion of the bowel including the anus was removed well above the growth and the proximal end of the gut was fixed below the sacrum. The wound could not be kept clean although the patient was suspended in a hammock and kept for long periods in an antiseptic bath. The whole posterior wound broke down and the patient died from septic intoxication on the twenty-first day.

CASE 385.—The patient, a male, aged 43 years, was sent to hospital by Mr. J. Wilde Smith of Ardwick on March 26th, 1900. Some 12 to 18 months previously he had had an attack characterised by nausea with some regurgitation of greenish bitter material. This lasted for about a fortnight. There was no passage of blood or mucus at this time. Six or seven months before admission, after lifting some heavy bales, the patient was attacked by severe pain in the hypogastrium and he says that there was some prolapse of the bowel—"the seat came down." Since that time small quantities of blood and mucus had passed per anum frequently, sometimes even 12 times in one day, with great tenesmus. Both these latter symptoms were increasing. There had been no vomiting and no loss of flesh. On examination on March 26th the sigmoid was found to be invaginated into the rectum very high up. At the apex of the intussusceptum was a tight stricture just admitting the tip of the finger with difficulty. The wall of this stricture, which extended for a quarter of an inch upwards, was rough, hard, and friable but did not bleed easily.

On March 27th left inguinal colotomy was performed. The bowel was opened on March 29th. On April 10th the patient being placed in the Trendelenburg position, a median pubo-umbilical incision was made. The peritoneum was found to be healthy. An intussusception of the sigmoid into the rectum was easily found and was isolated by sponges. Maunsell's method of excision of the intussusceptum which contained the new growth was adopted. A section through the bowel passed just below the peritoneal line of reflexion. When reunited the bowel was replaced in the pelvis and the abdomen was closed. On June 2nd all was perfectly healed and fluid passed freely from the inguinal wound through the anus and *vice versâ*. The patient was sent to a convalescent home. He was readmitted on June 25th. The colotomy wound was closed on July 3rd and perfect recovery followed. In June, 1905, Mr. Wilde Smith reported: "Still continues in perfect health."

CASE 438.—The patient, a female, aged 31 years, was sent to the hospital by Mr. R. B. Smith of Manchester on June 4th, 1901. Three or four years previously she had noticed pain around the anus. 12 months before admission she had suffered from influenza. At that time she first noticed blood in the stools. This had continued more or less ever since. For the same length of time there had been increased constipation, difficulty in walking, and the left leg had felt cold and numb, whilst there had been marked loss of flesh. Five weeks before admission she had undergone an operation for hæmorrhoids. An examination per rectum was made on the 7th. At the upper extremity of the rectum was a circular, hard stricture, slightly invaginated downwards, not bleeding on touch, and fairly moveable on the parts around.

On June 10th left inguinal colotomy was performed. The bowel was opened two days later. On the 20th with the patient in the Trendelenburg position, a median abdominal incision was made. The parts involved were unreachable. The abdomen was closed. On the 24th the patient was placed in the lithotomy position and the posterior wall of the vagina was split vertically. The peritoneum was opened and the bowel was drawn down. The intussusceptum portion was removed by Maunsell's method. Two inches of rectal wall were removed. It was doubtful if this included all the growth, since on examination per rectum a fortnight later scattered islets of growth could be felt in the proximal gut and there was a discharge of foul material by the anus from the fifth day after this operation. The patient

recovered, however, sufficiently to return home on July 12th. On Sept. 21st she returned to hospital with the rectum full of new growth. At first it was thought inadvisable to interfere further but Weir's operation had just been reported, so as she wished that something more should be done after all the risks had been fully explained to her and her friends this was carried out on the 27th, Mr. A. J. Rodocanachi and Dr. H. R. Hutton undertaking the work from the anal side, whilst I undertook that from above. The operation is a very severe and tedious one, and when the sigmoid was at last united to the anal segment it formed a rigid tube across the pelvis under considerable tension, whilst the pelvis presented a large area which could not be covered by peritoneum. It was filled with gauze which was brought out behind the anus, and drainage-tubes were arranged so as to drain this area as effectively as possible, but the shock of the operation proved too great and the patient died on Oct. 1st partly from this and partly, it is to be feared, from septic absorption from the pelvic area. The bowel was found post mortem to be firmly united and watertight.

I have seen and practised almost all the various operations recommended in these cases but the results of intra-rectal, perineal, and vaginal methods have been so unsatisfactory that I have definitely given them up. Kraske's or some modification of his operation for rectal growths, Maunsell's, or simple excision and reunion for sigmoid growths, appear to yield the best results. Weir's operation I have practised once but do not intend to repeat. In some cases, especially in very fat patients, where mesentery and all the internal organs are loaded with fat, it has appeared to be the safest policy to be content with simple colotomy.

Diseases of the bile passages.—It is probably in diseases of the bile passages that as many changes have taken place in the technique of the operations practised upon them as in any others in the abdominal cavity. Of such operations I have performed 36 with five deaths. The earlier ones were most unsatisfactory. Above all things we dreaded the entrance of infective bile, or, indeed, of bile of any kind into the peritoneal cavity. The gall-bladder was therefore sought for and united to the parietes and only when this was securely surrounded by adhesions was it considered safe to open it. Naturally, this entailed often fruitless fishing for calculi, which, even if successful, could only remove those in the gall-bladder itself or possibly in the cystic duct. The very adhesions we were at such pains to make rendered us absolutely ignorant of the existence or otherwise of calculi in the common or hepatic ducts. Indeed, the latter were looked upon as out of the range of surgical effort. The bladder was itself first united to the skin. This always entailed a biliary fistula; then it was fixed to the fascia, later to the peritoneum. Although now we could reckon upon a cure without sequent fistula the old difficulties still remained as to duct stones. Mainly profiting by the splendid work of Mayo Robson in this region, whose operations I have personally watched with admiration, and also by the study of the work of Kehr, Fenger, and Murphy on this subject, it has become possible both to do efficient and complete work in all cases of biliary calculi and to detect them at a much earlier date than was practicable at the time when I commenced operative work of this kind. The gall-bladder and ducts have in the majority of my cases been attached through Mayo Robson's vertical incision in the outer border of the right rectus muscle and this incision gives admirable access to these viscera, but lately, as I have said, I have had the advantage of seeing Mr. Rutherford Morison carry out his method by transverse incision from the outer edge of the same muscle outwards into the right flank. Since that time I have practised his method once or twice, as in a case detailed below, and have every reason to praise it. In one of my cases I was somewhat embarrassed by the tendency to prolapse through it of the hepatic flexure of the colon, but I think that might be prevented in future. The case referred to was—

CASE 608.—A woman, aged 33 years, was sent to hospital by my friend, Mr. Harold J. Moon of Levenshulme, on June 8th, 1904. She had had five children but no miscarriages. She was at the time of operation four and a half months pregnant. For two years she had suffered from attacks of pain beginning below the right scapular angle and passing round the right side to the epigastrium. For the last four or five months these had been increasing both in frequency and severity. The pain was on each occasion associated with vomiting. There had been transient jaundice on more than one occasion, disappearing within two days. There was no marked alteration in the colour of the fæces, although one stone at least had been found in them. Her confinements had always been severe and she looked forward with considerable dread to the possibility of the concurrent hepatic pain with that of labour. She was advised to wait until the conclusion of the pregnancy but she preferred the risk of abortion and pressed for the operation. A severe attack of pain and vomiting occurring on the 12th and 13th she became still more insistent and operation was therefore proceeded with on the 17th.

Morison's incision was used. The gall-bladder was easily found and was emptied of a large number of small round calculi. A drainage tube was tied in and the abdomen was closed. She recovered rapidly, no interference with pregnancy took place, and she was delivered of a fine boy at term, being attended by Mr. Moon. She was discharged from hospital on July 7th. In November she brought her child with her and was shown at a meeting of the Clinical Society of Manchester. She had had no recurrence of pain.

Another case with a somewhat curious history may be worthy of reproduction here.

CASE 552.—The patient, aged 48 years, was sent to hospital by Mr. J. D. Willis of Gorton on April 16th, 1903. When she was four years old she had been taken to New Zealand by her parents and had remained there for 18 months. When she was 20 years of age she had a very severe illness, lasting for eight months, and culminating in the formation of an abscess in the epigastrium. When this gave way a suppurating hydatid cyst was extruded. Menstruation commenced at 16 years of age and the menopause occurred in her forty sixth year. The periods had always been regular. She had had typical gall-stone colic for several years; a very severe attack had occurred five or six years previously to examination and had lasted more or less for 18 months; slighter attacks had occurred from time to time since but these had increased markedly during the last three months. Each attack used to be associated with vomiting; this had lately disappeared. The earlier attacks had recurred every week or fortnight, latterly they had appeared two or three times a week. Each attack began as a dull ache in the right hepatic region or with a feeling of dyspepsia. Then acute pain would come on, sometimes suddenly, sometimes remaining subacute for some time. At times it took the form of a dull pushing sensation, at times of a sharp shooting.

Operation was undertaken on April 19th. Robson's incision was made which had to be enlarged downwards. On opening the peritoneum a long Riedel's lobe was encountered, hanging down like a saddle flap and marked outside by a narrow fibrous intersection at the level of the edges of the ribs. Below this lobe the omentum was firmly adherent to the liver, the stomach, the pylorus, the duodenum, &c. The gall bladder was found to be deeply buried beneath this and tightly contracted upon a single unfaceted, mammillated, dark-brown calculus of the size of a hazel-nut. There were no other calculi in the ducts. This was removed and its nucleus was found to contain hooklets. Drainage continued for a time but the sinus soon healed and the patient made a perfect recovery.

Amongst my cases are ten in which the cystic or the common duct was also opened but I have nothing to add to the technique so well known since its description by Mayo Robson and as they contain nothing specially interesting in themselves I do not detail them here. I have had one rather unusual—Robson considers it unique—specimen of the multilocular cystic degeneration of the gall-bladder but as I have already published an account of it in THE LANCET[1] I pass over it now.

Operations upon the bladder, kidney, and ureter.—Of these I find notes of 46 with six deaths, four of these being after nephrectomies. As space is valuable I will only say that in the diagnosis of these I have found great help from careful x ray photographs made for me by Messrs. Mottershead of Manchester and by the use of Harris's segregator and of the new cold lamp cystoscope. In some cases the preliminary injection of indigo carmine has assisted greatly in demonstrating the permeability or otherwise of the ureters, the orifices of which are much more rapidly detected and clearly defined by this method.

In all lists of this kind cases occur of peculiar interest which yet do not readily fall into any great class. I shall conclude by reproducing one or two of these.

[1] THE LANCET, July 13th, 1901, p. 72.

CASE 339.—On Nov. 23rd, 1898, I was asked by my friend Mr. R. B. Morris of Church Stretton, then resident at Urmston, to see with him a very emaciated child, aged six years, regarding whom the following history was given. On the 8th she had begun to vomit and had complained of epigastric pain. This condition had continued until the 12th when improvement set in, and she had been allowed to get up on the 18th. On the 20th the condition had become much worse, the vomiting had returned and was much more frequent, the abdomen had begun to distend, and the pain had become localised and severe in the left hypochondrium. This had continued and had increased until our visit together on the 23rd. The child was in a small tenement house but was too ill to be moved. I was anxious to have her for operation in the Trendelenburg position. Of course, no table giving this position was to be had and it was rather late at night. A stout kitchen table was obtained and upon it an equally stout kitchen chair was placed reversed so that the edge of the seat and the top of the back touched the table top. The two were securely bound together by ropes. A pillow was placed over the back of the chair, which sloped upwards at an angle of 40°. Upon this the child was laid when anæsthetised, the head resting on a pillow on the table, the knees and legs being secured to the legs of the chair. Abdominal section was done and a band was found exactly at the spot to which the child had persistently referred her pain; this was divided and removed and the abdomen was re-closed. A loop of small intestine which had been compressed by this band was released by its division and the child recovered absolutely, convalescence being somewhat delayed by a tendency on the part of the patient to get her fingers in the wound, this necessitating the arms being kept bound to the side of the bed.

CASE 526.—The patient, a female, aged 19 years, was admitted on March 23rd, 1903. She had suffered for years from dyspepsia, and she said that for six weeks previously to admission she had vomited everything she had taken. She had become much worse during the last fortnight. The last stool had been passed on March 12th. She complained of a "band-like" pain in the epigastrium. The abdomen was supple, was not distended, and contained no palpable mass. An enema brought away a small amount of fæcal material.

The stomach having been emptied by a syphon the abdomen was opened. The small intestine was found to be collapsed and the mesenteric veins were swollen and dark. At the hepatic flexure the whole small intestine with the ascending colon, which was quite free and unattached up to this point, were twisted upon the flexure as an axis two or three times. This volvulus was untwisted and the cæcum was fixed down by suture to the right iliac fossa, but the patient died the same night.

CASE 563.—The patient, a female, aged 32 years, was sent to hospital by Dr. T. B. Riddall of Longsight on Nov. 27th, 1903. This was a case of muco-colitis treated by Weir's method of irrigation through the appendix, which was fixed in the abdominal wall, opened, and utilised as a channel by which the cæcum might be reached directly. The result was sufficient to encourage repetition in another case suffering from this otherwise intractable malady. It was noteworthy that at no time during the three months that the appendix remained patent was there any escape of fæces or flatus from this opening.

CASE 576.—On Sept. 5th, 1903, I was asked by my friend Mr. S. H. Mason of Moss Side to see with him a woman who had had two miscarriages, the last one 14 days previously. From this she had apparently perfectly recovered and was to have risen from bed when she was suddenly taken ill on Sept. 3rd, the fourteenth day, with vomiting and absolute obstruction. The vomit became brown and grumous looking on the morning of the 5th and she was at once transferred to a surgical home.

Abdominal section was performed and a coil of small intestine was found adherent for two inches deep down in the pouch of Douglas. The loop was freed and the abdomen was closed. 12 months later she was safely delivered of a full-term child and she remains in perfect health.

The symptoms and signs of *ectopic pregnancy* are usually clear enough and can scarcely be mistaken by those who are accustomed to them, but they completely misled me in the following case.

CASE 586.—On Feb. 2nd, 1904, I was asked by my friend Dr. Riddall to see with him and his partner, Mr. B. W. Conway, a young woman who had been married for three months. There had been amenorrhœa for 11 weeks, with slight brownish bloody discharge for three days. There had been some pain in the left iliac fossa. On examination with the finger over the vagina and bimanually a double vagina was recognised, with double cervices. The uterus itself, however, appeared to be single and on its left side, and distinct from it, there was a small soft and tender mass which was diagnosed as a probable ectopic pregnancy. Abdominal section, however, showed a double uterus with a pregnancy on the left side, which a few days later aborted.

I have not attempted to compress into the limits of one paper a complete account of all the work suggested by the title but enough has, perhaps, been said to show some of the changes which have taken place in abdominal surgery during the past 20 years and the effect of asepticity in rendering possible work which previously would have been considered impracticable.

Manchester.

A CASE OF BLACKWATER FEVER OCCURRING IN THE NORTH OF IRELAND AND TREATED WITH QUININE.

BY ROBERT MOWBRAY, M.D. R.U.I.

I REPORT this case to show that a medical man, no matter where he resides, may be called suddenly to a case of blackwater fever and to assist in removing a doubt which still appears to exist as to its treatment.

The patient, a young man engaged in constructing the Cape to Cairo Railway about and north of Victoria Falls, got his first malarial attack at the latter end of February, 1904, while travelling in a bullock wagon from the railhead to the Falls. He had never previously taken quinine. He had attacks off and on till the middle of July and did not take quinine systematically as he said that it gave him pain in the back. He continued fairly free from July to October when attacks came on again and continued till February of this year when he was invalided home. He had attacks during the first week of the voyage, from which time he was free till nearly two weeks after landing in this country. About March 4th of this year he began to have attacks of ague every evening, increasing in severity till the 9th when blackwater fever for the first time developed. I was called urgently at 7 P.M.; he had had a severe rigor, was vomiting incessantly, and was passing urine like blood. His axillary temperature was 106·5° F. Never having met a case before I was in doubt as to treatment but upon the authority of published cases I made up my mind that quinine given hypodermically was the right course. I gave 18 grains at once and ten grains three times a day for five days and twice a day for two following days. The patient was much better on the second day. His temperature was 102° and his urine was less highly coloured, but vomiting and thirst kept up until the third day, when he became fairly comfortable. A week after the attack his urine was quite clear and gave no deposit on boiling, but his temperature never sank below 100° in the axilla. Just one week from the first attack he had a relapse in the middle of the night; his temperature was 105·5°, he was delirious, vomiting, and passing urine like blood. I now blamed myself for having lessened the quantity of quinine given during the last few days and determined to push it in future till, if possible, the last germ of the brood was killed. I gave 15 grains at once and 12 grains three times a day for a week. The patient rapidly improved and in a few days he was free from the blackwater and other distressing symptoms. At the end of the second week from the first attack, being afraid lest I should poison my patient with quinine, I sought information in the highest quarter as to how long it was safe or desirable to continue such doses. My authority, after having had the advantage of talking over the telephone with one whose name is a household word in malarial literature, informed me that the quinine should at once be stopped and that it should not be given at all in blackwater fever. Being still in doubt I wrote to a professor of tropical medicine and he said that my treatment was quite right and that the quinine in reduced doses should be given for the next few months. After quinine had been given for 20 days nature took the case into

her own hands. A violent attack of acute dyspepsia, which a single dose of quinine seemed to aggravate, came on and continued for two weeks by which time the patient was greatly exhausted and emaciated. After this he began to recover, at first slowly then rapidly gaining strength till five months after the first attack at home, he is quite well and strong. Latterly, he has resumed quinine in small doses but intends in future to keep out of the way of infection. About 60 injections were given each in two drachms of fluid by an ordinary serum syringe; both the syringe and solution having been previously boiled no puncture became septic. Anæsthesia lasting for weeks was caused by the quinine in the neighbourhood of the punctures.

Castlederg, co. Tyrone.

THE TECHNIQUE OF THE EXAMINATION OF SPUTUM FOR TUBERCLE BACILLI FULLY DESCRIBED.

BY CHARLES GASKELL HIGGINSON, M.A., L.R.C.P. LOND.,

LATE ASSISTANT MEDICAL SUPERINTENDENT, CROOKSBURY OPEN-AIR SANATORIUM.

THE examination of sputum for the tubercle bacillus is not difficult to do well if the observer has been well taught and has a good microscope; but if these conditions be absent the results are most unsatisfactory. I regret to say that in my judgment none of the many text-books that I have consulted (except Dr. Charles H. Melland's "Clinical Manual") goes into sufficient detail on this point. Therefore I venture to support Dr. Melland's attempt at detailed exposition and proceed to describe with even more detail my own practice as I learned it from Mr. Roland A. Stevenson at Pinewood, near Wokingham. I take off the cover from the little glazed saucer in which the fresh sputum lies; then, with a pair of sharp-pointed forceps, I make a sudden snatch at the most purulent part of the sputum. Thus I get at the end of the forceps a tiny bead of sticky sputum. I then take a bright, clean, glass slide, rub it over with washleather, and write on its lower end with one of the pencils made by Faber for marking glass or earthenware the name or number of the patient and the date of examination. On this slide with the forceps I thoroughly tease out the tiny bead of sputum, so that in the centre of the slide there is the thinnest possible film of sputum spread over a circle of about half an inch in diameter. The points of the forceps are then heated red-hot in the flame, plunged into a cup of cold water, and dried on a clean cloth in readiness for future use. The film is often seen to be quite dry, but, if not so, I hold the slide with a thumb and forefinger at each end and pass it once or oftener, film upwards, over the flame of a spirit lamp, taking care by touching the bottom of the slide with a finger, that it shall not be made any hotter than the finger can bear. Having done this until there is no more moisture to be seen in the film, I lay the slide, film upwards, upon a flat surface. I then take in a pipette a few drops of carbol-fuchsin solution and drop them on to the film so that it is just covered, the solution consisting of the following ingredients: fuchsin, one gramme; absolute alcohol, 15 cubic centimetres; and carbolic acid solution (5 per cent.), 85 cubic centimetres. I then pass the slide, film upwards, through the flame of the spirit lamp as before; at the first passage the lamp deposits a watery mist on the cold slide; at the second or third passage this vanishes and at times the drops of carbol fuchsin solution can be seen to send up from the slide a little cloud of water vapour, though it does not and must not boil; the finger, touching the slide where it has been most exposed to the heat of the flame, ought to feel the slide to be about as hot as is comfortably bearable. Then the slide should be laid on a flat place, say across a glass trough of about the size of a common pen tray, such as is used to lay pipettes in. After about seven minutes the carbol fuchsin has done its work and stained the film a bright crimson. Then I take the slide to a white basin and turn on a tap of cold water with a narrow orifice on to which has been fitted 18 inches of indiarubber tubing of about the calibre of the tube of a Higginson syringe. The water should flow in a gentle stream exactly like the stream that is obtained when one of those syringes is used as a syphon; the crimson stain is then washed off in this running stream till no more pinkness remains in the water that runs off the slide. I then take one of Baird and Tatlock's glass slide-baths, each of which is about four inches long, one and a half inches broad, and four inches deep, and holds eight slides upright, each in a separate groove, and fill it two thirds full of a 25 per cent. aqueous solution of strong sulphuric acid. Into this bath I put the slide, inscription upwards, so that the film is covered. The film should be decolourised so much that when the slide has again been washed under the stream there shall appear against the white background of the basin only the very faintest rose tint. This usually happens after about a minute's immersion in the sulphuric acid solution; but if, after washing with the stream from the rubber piping, a deeper tint than this is seen, the slide must be immersed again in the acid solution. On the second immersion the decolourisation proceeds with surprising rapidity, so that the slide should be washed and re-examined in ten seconds. After the slide has been washed under the tap much of the colour of the films commonly returns which the acid bath had temporarily quite removed. Then the slide with the faint rosy film is immersed in another similar slide-bath containing a saturated aqueous solution of methylene blue. (I venture to disapprove of the practice of trying to decolourise and to counterstain *simultaneously* by the use of a mixture of sulphuric acid and methylene blue.) In about three minutes the slide is taken out and washed under the stream from the tap. The film is then seen to be of a bright blue colour and slide is laid flat on the glass trough. The acid solution and the methylene blue solution are then poured back into their bottles and they may be used perhaps 50 times again. The slide is then dried with a cloth, the film being untouched, and the drying is completed for the slide and the film by passing the slide over the spirit lamp as previously described; or a hot air bath may be used by heating a metal slide rack on wire gauze on a tripod over a spirit lamp. A drop of cedar oil is placed on the film and the microscope is brought out. The microscope is fitted with an Abbé condenser so that the light may be concentrated on the film; it has also three object lenses, of one inch, one-sixth of an inch, and one-twelfth of an inch respectively, all of which are fixed on a nose-piece and can by mere rotation, without any screwing and unscrewing, be adjusted in turn to the central axis of the barrel and the eye-piece. The blind is drawn down and an electric light is turned on, fitted with a paraboloid reflector so as to illuminate the microscope's mirror. The slide is then brought on to the stage, which is itself moveable by a couple of coarse adjustment screws, along an ordinate and an abscissa at right angles to each other, up and down and from side to side. It is then focussed by the one inch lens. A bundle of blue fibres should be selected and placed in the centre of the field. Then the one-twelfth inch lens should be switched on and by the coarse adjustment should be gently lowered, till the oil seems to rise and touch the lens. The lens is then not near enough to the slide for clear vision, and we look down the eye-piece, while with the fine adjustment we gently lower the lens till the blue fibres are focussed. The Abbé condenser should be brought close up to the slide so as to illuminate it as brightly as possible. Amidst the blue fibres and cells are seen little pink rods, some straight, most slightly curved, each about five times as long as it is broad, often two together, often many in a clump, each *in appearance* from one-eighth to one-sixth of an inch long. These are the tubercle bacilli, which, once stained by the carbol fuchsin, are not, as the other cells are, decolourised by the sulphuric acid nor counterstained by the methylene blue. Before I put the microscope away I wipe off the cedar oil from the lens with a silk handkerchief. If the slide is to be kept the film should be dried with blotting-paper and mounted at once in Canada balsam. If the process of counterstaining by the methylene blue be omitted, the bacilli are seen merely stained a deep crimson in a field of a faint rose pink. The two methods are perhaps equally good and I habitually use both for every specimen; on the pink slides there are usually more bacilli seen, but the blue counterstain affords the more striking demonstration. The crimson bacilli ought to stand out against the blue background almost as clearly as they are represented in the pictures of Bury's "Clinical Medicine" or Hutchinson and Rainy's "Clinical Methods."

In my experience the search for the bacilli in the sputum of consumptive patients is commonly quick, sure, and easy if the one-twelfth inch lens be used, with the oil immersion; if

the one-sixth inch lens be used, the student will be discouraged and a good clinical resource will be discredited. I am told that there are laboratories, especially in Germany, where there is a better and quicker technique than what I have described and a wiser and more thorough elaboration of detail. If so, surely the fullest details of that better technique ought to be laid before us; but meanwhile I venture to hope that the method which I practise is worthy of being recorded in full detail for such of my medical brethren as care to read this memorandum. Finally, when I have been beyond the reach of slide-baths, fixed white basins with outflow pipes, electric lamps, paraboloid mirrors, and water taps laid on in the laboratory, I have managed very well with common little glass tumblers, a white wash-hand basin from a bedroom, an eighteen-penny paraffin lamp with its tin reflector, and a Higginson's syringe, wherewith I syphoned from a large bowl placed on a shelf the gentle stream of water which after washing my slides was caught in a whiteware slop-pail standing on the floor. Thus, if only the microscope and the method be available the technique can be carried out in an ordinary workroom, the accessories being improvisable by the ingenuity of the microscopist.

Birmingham.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THE USE OF TURPENTINE IN RENAL HYDATIDS.

BY E. MACKEY, M.D. LOND., M.R.C.S. ENG., M.R.C.P. LOND.,
SENIOR PHYSICIAN TO THE SUSSEX COUNTY HOSPITAL, ETC.

A MAN, about 60 years of age, came to me in December, 1904, complaining most of extreme flatulent distension, which was worse at night, causing insomnia, mental depression, and a general condition of illness unfitting him for responsible work. Incidentally he mentioned that for 15 years past he had had occasional attacks of colic followed by the passage of hydatids in the urine, usually once or twice in 12 months. The last attack occurred in October and was very severe, so that his condition was critical and he had not yet recovered strength after it, though now almost free from pain. The urine (specific gravity 1034) deposited urates and uric acid. As he had been told by several advisers that no medicines affected hydatids he asked for no treatment in that direction, although a tumour of the size and shape of a large orange could be felt deep in the left kidney region; it was moveable, smooth, not tender, and without definite thrill. The prescriptions which he showed were mainly for flatulent distension and when this was relieved (as it was by regulation of diet, sulphites, cachets of charcoal with thymol, validol, &c.) he commenced (on Dec. 13th) to take 15 minims of ol. terebinthinæ mixed with liquor potassæ, mucilage, and liquorice night and morning. He continued this as the main treatment and was able in February of this year to return to his duties which involved administration of a large institution. All the symptoms were better and the lump was smaller.

On March 2nd he forwarded by post a sample of hydatid vesicles varying from the size of a pea to that of a hazel-nut "passed with but little pain"; the turpentine had been continued, he said, "with the exception of very few days"; the general health was improved. On April 10th more were passed, described as "smaller and darker," and the medical man who had known about the cyst before the patient's visit to Brighton expressed himself as "very surprised and pleased to find it only half its former size." The letter adds: "I am also very much better re dyspepsia and flatulence," confirming my opinion that the severe attacks which for a long time occurred about 2 A.M. were connected with mechanical pressure on the colon (now relieved). Early in July, turpentine having been continued, he reported "no sign now of kidney trouble though there is a small lump; the doctor says it is so small and diminishing so continuously I need not go to him again. ..... I have been travelling in Ireland lecturing three times a day; all indigestion and flatulence have left me. I really feel a new man." His expressions of grateful thanks I interpret as showing the very suffering state which he had been in and the remarkable benefit that he had obtained apparently from the remedy which I take the opportunity of again bringing into notice.

Renal hydatids are so far rare that the late Sir W. Roberts (second edition) could only refer to 63 cases, in 20 of which "recovery was assumed." He mentions that turpentine was given in a large number of those recorded but finds "little evidence of its beneficial influence." This remark has no doubt influenced practice, and Whitla (fourth edition) goes so far as to say "the wild statements about efficacy of kamala, turpentine, &c., have been proved devoid of truth." My own opinion of its still being worth trial—especially in renal cases—was derived from conversation with Dr. Warburton Begbie, no mean observer, but I have not been able to find the subject mentioned in his writings. *Valeat quantum.*

Hove, Brighton.

A NOTE ON THREE UNUSUAL MIDWIFERY CASES IN ONE WEEK.

BY H. H. ROBINSON, M.R.C.S. ENG., L.R.C.P. LOND.

THE note on these three cases has been written chiefly on account of their extreme rarity, as none of them presented any extraordinary difficulty in treatment. They occurred in a general practice within seven days.

On Jan. 14th I was called by a midwife to a case which she was attending and on arrival I found that the child had been born some little time and that the mother was apparently dying. There was a huge mass outside the vulva, lying on the bed, which proved to be the uterus completely inverted and extruded as far as the vaginal vault. To the surface was attached the placenta, very firmly adherent, as were also the membranes. The patient was suffering from profound shock, so I first administered strychnine, digitalin, and "ergot aseptic" hypodermically. She rallied a little, so I proceeded to strip off the placenta and membranes and then after considerable difficulty replaced the uterus. The first portion of the re-position was easy but the swollen state of the fundus caused much trouble. Shortly after this my colleague, Dr. James Pinkerton, arrived and for two hours we did all in our power to relieve the extreme shock but with no success, the patient, who was a bipara not much over 20 years of age, dying at the expiration of that time. It was strongly denied that traction on the cord in the attempt to remove the adherent placenta was the cause of the accident.

The next case was one of triplets, all girls, all footling presentations, and the unusual feature of the case was that only one placenta was present with three amniotic sacs. I examined the placenta carefully but found no evidence of the coalescence of two.

The third case occurred six days later and on arriving I found that the child had been born about two hours. There was a large bluish tumour protruding from the vulva, larger than a fœtal head at term, which consisted of the cervix uteri enormously swollen. The woman had a very tight perineum and evidently in straining had forced the uterus down and the vessels had become constricted. Efforts to reduce the cervix without anæsthesia were unsuccessful; chloroform was then administered, after which the reduction was effected and later in the day the cervix appeared quite normal.

Birkenhead.

A CASE OF CÆSAREAN SECTION.

BY ALFRED E. ASH, M.D. VICT., M.R.C.S. ENG.

BEING recently requested to attend an inmate of the South Molton Workhouse I found that the patient, a primipara, aged 18 years, had been in labour for several hours. On examination a hand was felt to be presenting low in the vagina and I therefore at once sent for Mr. H. J. Smyth (the official deputy of the gentleman for whom I was acting) to anæsthetise the patient as a preliminary to version. Chloroform was administered and I then found that the case was one of extreme pelvic contraction in the antero-posterior diameter, and although after considerable difficulty a foot was brought down, yet it was impossible

to effect the delivery of the breech. The general condition of the patient was becoming serious and it was decided that immediate Cæsarean section was indicated. After some little delay in obtaining the necessary instruments I administered the anæsthetic and Mr. Smyth opened the abdomen, incised the uterus, and rapidly removed the fœtus and placenta. The uterus contracted well and the incision in its wall was united by means of three silk sutures. The abdominal wound was kept open for some time and swabbed out until the hæmorrhage from the uterine wall had practically ceased, the abdominal wound being then closed with one set of silk sutures. I followed the usual lines of after-treatment. The wound was dressed for the first time on the eighth day and was found to be entirely free from suppuration. With the exception of some temporary atony of the bladder the mother recovered without a bad symptom. The child was healthy and well nourished but presented a large spoon-shaped depression of the frontal bone corresponding to the point of pressure of the head on the sacral promontory.

South Molton, North Devon.

Reviews and Notices of Books.

Scientific Reports on the Investigations of the Cancer Research Fund. In two parts. London: Taylor and Francis. 1905. Price 2*s.* 6*d.*

AT the annual meeting of the general committee of the Imperial Cancer Research Fund held recently at Marlborough House a highly important report was presented,[1] setting forth in detail the investigations carried out under the direction of the executive committee during the two and a half years that have elapsed since the inauguration of the fund. The report, which is signed officially by the general superintendent of research, Dr. E. F. Bashford, is published in two parts, the first of which deals with the statistical investigation of cancer and the second with the growth of cancer under natural and experimental conditions.

That a vast amount of patient, novel, and useful research has been accomplished by the superintendent and his colleagues, Dr. J. A. Murray and Dr. W. Cramer, is attested by every page of the report, although certain of the opinions therein advanced on recondite biological and pathological points will not be universally accepted by experts. This, of course, is well known to our readers, our columns having been open to the opposite views of several other authorities. It is in the present state of our knowledge (or ignorance) inevitable that in all which relates to what may be termed the life-history of malignant disease there should exist among scientific men much divergency of opinion, and until certain of the fundamental or principal points challenged have been adequately discussed and some general agreement has been attained we cannot expect to escape considerable eager controversy. But we may be excused for hoping that that controversy will always be conducted with urbanity, the temperate and courteous language which befits scientific discussion being employed. We are constrained to make this remark in the interest of scientific progress, for we regret to note a tendency in more than one quarter to treat contemptuously the opinions of antagonists whose honesty and whose ability to conduct scientific research are entirely above suspicion. Our acquaintance with the pathology of cancer is so small in certain directions though so appallingly large in others, and the work of one school of investigators is so directly opposed in its originating creeds to that of other observers who have had equally good opportunities, that no one is called upon at this phase of the controversy to take a side. The open mind is not a confession of pusillanimity but a condition of the circumstances. Dr. Bashford must have expected that the volume of these scientific reports dealing with the zoological distribution, the limitations in the transmissibility, and the comparative histological and cytological characters of malignant new growths, would provoke some contradiction, but his views being founded upon elaborate and carefully checked labour he rightly expresses them without too many reservations. Having carefully perused this volume we may say at once that it has evidently been prepared with befitting care and ability and forms a valuable contribution to the debates that in the future will be frequent.

We must now turn to the consideration of the statistical side of cancer research, premising that we are not disposed to quarrel with Dr. Bashford because, in his natural and commendable zeal for purely experimental work, he seems to have formed a lower estimate than we ourselves have done of the value of statistical evidence in the elucidation of cancer problems. As far as we are aware no responsible authority has hitherto claimed for the national statistics anything more than this—that they furnish the best, and indeed the only, available indication of the terrible loss of human life which is caused by this disease; that indication being based, not in all cases on facts revealed in the laboratory or in the post-mortem room, but more commonly on the opinion of medical practitioners formed on clinical experience alone. The personal equation must count for much here just as it does in the results of pathologists, who, moreover, have to do their work in varying circumstances imposing chances of error from which the statistician is spared. Even if equal skill on the part of scientific observers could be assured, the conditions under which histological and pathological observations are made vary so widely that the results derived from different sources must be of very unequal value. In the present report the term cancer is held to include all forms of malignant new growth—a course which would appear to be justified in view of the difficulty that obtains, at any rate in private practice, in distinguishing one form of malignant growth from another. When the death-rates at different ages are compared it is found that carcinoma and sarcoma increase with advancing age in precisely the same manner, and this fact is held by Dr. Bashford to suggest that sarcoma and carcinoma are manifestations in different tissues of an essentially similar process.

Is cancer increasing at the present time or is it not? This is one of the foremost medical questions of the day and the almost universal belief that this terrible malady is rapidly gaining ground amongst us was undoubtedly the motive which induced the establishment and endowment of the Imperial Research Fund with the King as Patron and the Prince of Wales as President. Upon this important question there still remains a conflict of opinion and this, too, among experts whose judgment is in all respects worthy of confidence. On the one hand the national records of the last half century show a decided and progressive increase in the mortality attributed to malignant disease. And although it is unquestionable that some of this increase is apparent only and is due to improvement in medical diagnosis, it may nevertheless be seriously doubted whether the whole of it can be thus accounted for. Moreover, it is held by many surgeons of experience that cancer is now much more frequently encountered in hospital practice than was the case 20 years ago. On the other hand, it is contended by those who take the opposite view that inasmuch as the increase in cancer fatality is much greater in cases where inaccessible organs are invaded than in those where the part affected is readily accessible to examination, the evidence hitherto available is insufficient to prove an actual increase in the prevalence of this disease. At the present stage we do not know for certain whether cancer is actually increasing or not and it will be probably some years as yet before we are able to decide this question satisfactorily. Meanwhile,

[1] THE LANCET, July 8th, 1905, p. 105.

the report assures us that in the investigations of the Cancer Research Fund there is nothing which points to an actual increase of cancer. This is valuable information for the public who will also benefit by the fact that in another direction recent investigations have borne good fruit. The ground has at length been cleared of very much that was not only absurd but mischievous in the popular beliefs concerning the causation of cancer. Many prevalent fallacies have now been exposed respecting the supposed relation of malignant disease to the use of certain kinds of food. Sufficient evidence has accumulated to show that races of people subsisting on exclusively vegetable food are no more exempt from the ravages of cancer than are those living on an animal diet or on a mixed diet. The general impression that cancer is limited to dwellers in particular regions has also been conclusively proved to be unfounded, for specimens of undoubtedly malignant new growths have already been received at the laboratories of the English Conjoint Board, where the Cancer Research Fund carries on its work, from practically every known quarter of the world, not only from among the white population everywhere but from among the aboriginal dwellers in the tropics and from among civilised and uncivilised races of every caste and colour.

It is common knowledge that in both men and women cancer occurs with increasing frequency as age advances; but it has only recently been recognised that the same law is common to all mammalia—to those with short as well as to those with long lives. As regards mankind, the Registrar-General's sixty-sixth report shows that cancer is ten times as fatal at ages above 75 than it is at ages from 35 to 45. The data which have accumulated on the frequency of cancer in animals indicate a liability approaching that of man when age is taken into account. This information is important because there is reason to believe that the stage of life at which malignant new growths appear in animals stands in direct relation to the absolute duration of life in long and short-lived animals respectively. The span of life of the individual is not the same as that of the separate organs or tissues contributing to its maintenance. Some organs and tissues early attain full development and disappear; others, like the mamma and the uterus, are active only in adult life; and others, again, like the skin, remain functional to the end of life. The varying age-incidence of cancer in different organs of individuals of the same species presents contrasts similar to those found in different species with long or with short lives. Although the higher incidence of cancer in advanced life corresponds to the decline of reproductive activity this correspondence is probably no more than mere coincidence. Cancer is known to occur in castrated and in spayed animals at the same ages as in entire animals, and this shows that neither an abnormal secretion in the reproductive organs nor the cessation of their normal secretion can be regarded as the cause of cancer. According to the evidence of Mr. A. M. Trotter, veterinary inspector at Glasgow, cancer is found in a large proportion of the carcasses of cows when these are kept to advanced ages as draught animals. In the year 1902 27 cases of cancer were detected in cows slaughtered in that city, all of which were from aged beasts imported from Ireland. In the following year no fewer than 131 cases of cancer were discovered in the Glasgow slaughter-houses and of these as many as 116 were from aged Irish cattle. In the year 1903 malignant new growths were present there in the high proportion of 2·8 per 1000; so that the presence of a small proportion of aged cows with a high incidence among them of cancerous growths has resulted in raising the cancer incidence in the slaughtered cattle above that in man. In the course of his investigations in this direction Dr. Bashford has detected cancer in several of the lower animals in addition to those here mentioned. Thus aged mice are found to be liable to this disease in large proportions and many cases of cancer have been discovered in trout. From what has been said it is probable that excessive cancer incidence will shortly come to be regarded as a definite function of age and that it will be possible to predicate with some approach to accuracy the amount of this disease existing in a group of men or of other vertebrates from a consideration of their age constitution alone.

The Diagnosis and Modern Treatment of Pulmonary Consumption, with special reference to the Early Recognition and the Permanent Arrest of the Disease. By ARTHUR C. LATHAM, M.A., M.D. Oxon., M.A. Cantab., F.R.C.P. Lond., Senior Assistant Physician and Lecturer on Practical Medicine at St. George's Hospital; Assistant Physician at the Brompton Hospital for Consumption and Diseases of the Chest. Second Edition. London: Baillière, Tindall, and Cox. 1905. Pp. 224. Price 5*s*.

THE first edition of th's work was rapidly exhausted and the issue of a second edition has consequently become necessary. The scope of the various chapters remains the same but a few additions have been inserted and some of the sections have been amplified. Many interesting observations will be found in Chapter VII. which is headed "Other Forms of Treatment." Dr. Latham, for example, treated some patients suffering from pulmonary tuberculosis with urea according to the method suggested by Dr. H. Harper, but was not convinced as to the efficacy of this drug in cases of tubercle. He considered that the improvement which took place in patients who were placed under hygienic conditions was certainly not greater after a prolonged trial of urea than the improvement manifested in other control patients who were under precisely similar hygienic conditions without the inhibition of urea. Further, some patients were unable to tolerate the drug as it induced an irritative dyspepsia, a symptom that might be avoided by giving the substance in a large quantity of water.

Dr. Latham states his experience in the use of the serum introduced by Professor Marmorek. This serum has now been on trial for some months but only so far as advanced cases are concerned. Contrary to the usual practice in similar instances, Professor Marmorek particularly desired that the remedy should establish its value in the more advanced cases rather than in early ones, in which arrest of the disease is open to several interpretations. Dr. Latham rightly considers that it is too early yet to express a definite opinion as to the value of this serum but cases are on record which would seem to show that it undoubtedly exerts a neutralising effect on the tuberculosis toxin. In a large proportion of Dr. Latham's cases the patients expressed themselves as feeling better for the treatment; in some no benefit resulted; in others the physical signs, temperature, and general condition all improved. In none of his cases, however, could he say without hesitation that the serum had acted as a "specific" for the disease. Dr. Latham considers that in all cases in which the serum may be tried it is advisable not to push it unduly. Sufficient intervals should be allowed between the injections, as it would seem probable that too large doses, or injections continued for too long a period of time without sufficient intervals between, tend to lower the resistance of the body. He gives details as to the dose of the serum and the manner in which it should be given. Chapter VI. will prove interesting and instructive, for there will be found details of the open-air method of treatment as carried out in a private house.

We can cordially recommend to our readers a perusal of Dr. Latham's work.

LIBRARY TABLE.

The Medical Profession. By M. FOSTER REANEY, M.B. Lond., M.R.C.S. Eng., D.P.H., I.M.S. Dublin: Brown and Nolan, Limited. 1905. Pp. 128. Price 3*s.*—This little book is the essay to which the Royal College of Surgeons in Ireland has awarded the Carmichael prize for the year 1904, and within the modest compass of its pages a very fair description is given of the position of the medical profession in this country. There is no particular attempt at originality on the part of the author, as he points out in his preface, but the summary of the circumstances in which the practice of medicine is carried on in England, Ireland, and Scotland at the present time is a fair one and as comprehensive a one probably as could be given under the conditions laid down by the Royal College of Surgeons in Ireland for the guidance of the prize competitors. All Dr. Reaney's suggestions appear to us reasonable and most, or all, of them have appeared in THE LANCET or the *British Medical Journal*. He would have the preliminary education of the medical student standardised and improved; he would have the medical curriculum arranged so that the last two years or more of the student's time could be devoted to clinical work; he finds much to seek in the examination system; he welcomes the modern development of post-graduate work; and he thinks that the public, as the real beneficiaries, ought to supply the funds to carry on medical research work. Coming to the abuses of medical practice, he rightly insists that the out-patient departments of our general hospitals ought to be regarded as consulting rooms for the poor instead of as dispensaries where there is nothing to pay for treatment, and he suggests that "the first great step in the prevention of hospital abuse can be summed up as—one attendance only, unless recommended by a medical man as a suitable case for gratuitous treatment," a proposal which, we fear, is not practicable. Speaking of medicine as a career, he quotes the late Mr. Lawson Tait (whose name, by the way, is misspelt) as saying that the average income of the medical man is £200 a year, a figure which the author thinks far too low, preferring to suggest double that sum as more likely to be correct. All such speculation must be founded on no evidence worth consideration, while the significance of any figure that may appear probable is vitiated by the fact that the pecuniary position of many medical men making small gross incomes is comparatively easy if their outgoings are also small. With regard to contract work Dr. Reaney advocates the organisation of the medical profession and the proper development of the provident dispensary, while his summary of the position of the Irish Poor-law medical officers is a just one. We have read Dr. Reaney's essay with interest. He touches in a cursory manner upon many important themes, and though these have generally been much discussed in the medical and lay press he is able to approach them in a fresh manner. He has obviously, however, been hampered in an attempt to make his work very short, and at the same time very comprehensive; he would probably have done himself more justice if he had treated a smaller number of topics with greater detail.

Spectroscopy. By E. C. C. BALY, F.I.C., Lecturer on Spectroscopy and Assistant Professor of Chemistry, University College, London. With 163 Illustrations. London: Longmans, Green, and Co. 1905. Pp. 568. Price 10*s.* 6*d.*—Spectroscopy is a fascinating subject but, except in determining the spectrum of hæmoglobin, carboxyhæmoglobin, biliary pigments, and possibly chlorophyll, it has little practical interest for medical men. Mr. Baly's book covers a good deal of ground and will be read with profit by those who wish to know more of the subject from the practical side. He describes the various parts of the spectroscope, slits, prisms and lenses, the diffraction grating, the ruled grating, and so on. Further on we come to that very interesting aspect of the study, the photography of the spectrum, and here the limits of sensitiveness of the ordinary photographic plates are discussed. This chapter is of special interest, particularly in regard to the use of dyes for sensitising plates. If a plate is simply allowed to stand for a short time in the solution of a dye it become sensitive to those rays which are absorbed by the dye. Apparently the exact nature of the action of the dye is not known but the discovery has been of the utmost importance. In the chapter on the production of spectra is a section on absorption spectra in which the effects of gases, metals, and certain organic compounds are described, but we find no mention of the characteristic absorption bands given by blood or carboxyhæmoglobin or other pigments of physiological interest. The work is one of the series of text-books of physical chemistry edited by Sir William Ramsay, and, so far as we remember, it is the first book devoted entirely to the practical side and the author is an admitted expert on the subject. The book will be useful in helping those who have but a hazy idea of the application or value of spectroscopic methods, although Mr. Baly is inclined to presuppose that his readers possess a preliminary acquaintance of the technique of the subject.

Elementary Experimental Chemistry. By A. E. DUNSTAN, B.Sc., F.C.S. With 109 diagrams. London: Methuen and Co. Pp. 173. Price 2*s.*—This book is one of a series of junior school books published by Messrs. Methuen and is primarily intended for the use of candidates preparing for the Oxford and Cambridge junior local examinations. We are glad to find that the author has not confined his experimental facts to the mere requirements of examinational purposes. We are particularly pleased with his references to the history of the facts and the relation of this history to chemistry in the light of modern experiment and views. He thus refers to the discoveries of Priestly, Shiel, Lavoisier, and Black. In the chapter on experiments with chalk and lime he quotes the original observations of Dr. Black in 1755 on the fixed air in chalk. The book contains also sections on equivalents and the preparation of salts, and a number of exercises, while its examinational intention is illustrated in the series of questions given at the end and taken from the Cambridge local examination and the College of Preceptors' examination. We regard the book as of real educational value for the class of students for whom it was written.

Veterinary Pathology (Friedberger and Fröhner), Vol. II.: The Non-infective Diseases of Animals. Translated by Captain HAYES, F.R.C.V.S. Edited by Professor DUNSTAN, M.R.C.V.S., F.R.S. Edin. London: Hurst and Blackett. 1905. Pp. 767. Price 10*s.* 6*d.* net.—The first volume of this work was published about five years ago and was entitled "The Infective Diseases of Animals." It speedily ran into a second edition and the translation of the second volume has been somewhat delayed. The work was commenced by the late Captain Hayes and since his decease it has been completed by Professor Dunstan. It is a book whichshould meet with a ready sale among students of the diseases of animals and the original is the accepted text-book on the subject in Germany, whilst it has also been translated into French and is used as the text-book on the subject in the schools in France. It is a most readable book and the arrangement is exceptionally good. The second volume contains full descriptions and details of all the non-infective diseases with which animals, including birds, are troubled, the section on diseases of the skin being particularly full. The manner in which the work is presented to the public does credit to the printers and the publishers.

Glimpses of the Ages; or the "Superior" and "Inferior" Races, so-called, discussed in the Light of Science and

History. By THEOPHILUS E. SAMUEL SCHOLES, M.D., &c. London: John Long. 1905. Pp. xvii. and 409. Price 12*s*. net.—The object which the author of this book has set before himself is to disprove the current view that the coloured races are essentially inferior socially and intellectually to the white races. He argues that the anatomical peculiarities of individual races are illmarked and the distinctions founded upon them illusory; that European civilisation is of comparatively mushroom growth, the ancestors of the most progressive nations having been only a few centuries ago in a state of semi-barbarism; that long before the dawn of civilisation in this continent the Egyptians, the Mexicans, the Peruvians, the Chinese, and other coloured peoples had attained to high degrees of culture; and that among the negroes men of commanding ability, such as Toussaint l'Ouverture, have appeared and constitute a refutation of the popular view that these races are incapable of high development. He claims that the ancient Egyptians were of negro stock. As a result of his argument he blames the treatment meted out to the coloured races in the British Empire and in the United States, finding fault, for example, with the attempts made by means of taxation to make the natives in South Africa work and with the introduction of Chinese labour into that sub-continent, though the reason for his objections to this last measure are not very clear from the point of view which he adopts. The book contains much interesting matter, and we must at least admire the courage of a writer who attempts to overthrow the theory of evolution as applied to mankind when it does not seem to square with his own opinions.

JOURNALS AND MAGAZINES.

The Edinburgh Medical Journal.—The August number of this journal contains some papers of more than ordinary interest. It opens with the first part of a paper on the Treatment of Acute Peritonitis by Professor K. G. Lennander, in which, among other points of interest, he emphasises the importance of using long drainage-tubes after operation in conjunction with "wicks" of absorbent cotton. Irrigation with saline solution is also recommended. Dr. Donald G. Hall contributes an account of two cases of Hypertrophic Pulmonary Osteo-arthropathy with a critical discussion of the theories which have been put forward to explain this curious condition and the bibliography of it to the present time. Sir John Halliday Croom narrates some "Curiosities of Curetting" among them two cases in which this operation was followed by cessation of menstruation and permanent sterility.

The Scottish Medical and Surgical Journal.—In the August number of this journal under the title of "Religio Obstetrici," is published Professor A. R. Simpson's farewell address: it contains, as might be expected, some interesting reminiscences of the past and reflexions on the progress of knowledge. The 123rd Harveian Oration by Dr. Charles E. Underhill gives an account of Harvey's Lumleian Lectures before the Royal College of Physicians, based upon the notes from which they were delivered and which are preserved in the British Museum. Dr. Thomas D. Luke gives an account of a new synthetic anæsthetic drug, stovaine, which has valuable properties resembling those of cocaine but lacks some of the drawbacks of this substance, and Dr. Alexander James records some of his experiences of cases of cerebro-spinal fever which presented unusual symptoms and records an obscure instance of central nervous intoxication which simulated this malady.

The Medical Chronicle.—The greater part of the August number of this magazine is occupied by the first instalment of an article by Dr. C. Paget Lapage upon that degree of mental defect in children which is characterised as "feeble-mindedness," based upon a study of about 250 children in the special schools in Manchester. The various causes which may lead to this condition are discussed and the opinions of other writers are analysed. The author gives an account of his investigations as to the cranial configuration of these children and concludes that asymmetry is a characteristic feature of some value in recognising the condition, while the general physical development of these subjects is poor as compared with normal individuals. Dr. J. L. Falconer records a case of femoral hernia in which the vermiform appendix was found as the sole content of the sac.

Caledonian Medical Journal.—The opening article in the July number is by Dr. William Russell of Edinburgh, who writes on Intestinal Auto-intoxication and its Results. According to him, the chief cause of intestinal auto-intoxication is constipation combined with a dietary unduly rich in proteid substances which, by their putrefaction, yield various toxins such as skatol, indol, phenol, cholin, and neurin. These substances when absorbed by the bowel and conveyed into the blood give rise to the symptoms of "bilious" and "nervous" attacks. Dr. R. C. Maclagan of Edinburgh contributes a long article entitled "A Side Light to the History of St. Columba," in which he gives some novel interpretations of events recorded in ancient Irish history. His view is that various words usually supposed to denote persons or places in Ireland have hidden meanings by which they become in reality poetical euphemisms for the names of various parts of the human body. Dr. David Blair of Lancaster describes cases in which he found injections of tuberculin useful in the diagnosis of pulmonary tuberculosis.

Medico Technologisches Journal.—The first number of this new weekly German journal contains a variety of interesting articles profusely illustrated with engravings. The principal objects described are the ultramicroscope of Zeiss, an electric hot air bath, an object finder for the microscope, and surgical instruments used by Dr. Bakes in resection of the stomach and intestinal surgery. Two pages are devoted to a report of a discussion in the Vienna Gesellschaft der Aerzte on the Spirochæte found in Syphilis by Dr. Schaudinn and Dr. Hoffman of Berlin. In the opening article Dr. Berthold Beer, the editor, reminds his readers of the intimate connexion between recent advances in medical knowledge and improvements in the instruments and processes necessary for diagnosis and treatment. In conclusion he discusses the question of overcrowding in the medical profession and methods of counteracting its ill effects by organisation. The offices of the journal are in Vienna, at No. 15, Mariannengasse, IX/2, Vienna.

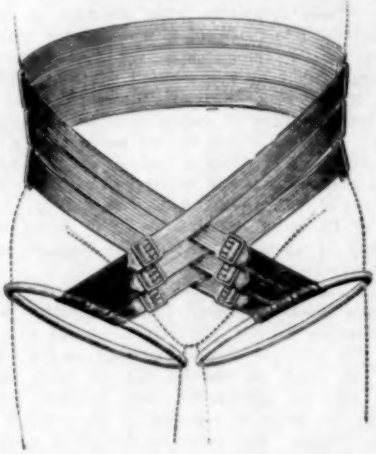
Practitioner.—A large variety of subjects comes under consideration in the present issue. Recent neurological literature is well and carefully reviewed by Dr. Wilfred Harris who pays particular attention to Dr. James S. Collier's excellent contributions to *Brain*. Mr. Edred M. Corner writes on the very important subject of Obstruction of the Bowels after Pelvic Operations and enters upon the question of preventive details in the technique of operation. Dr. W. Langdon Brown's article on the Function of the Pancreas is highly suggestive, and Carcinoma of the Stomach, Arteriosclerosis, and recent work on Syphilis are some of the other subjects dealt with.

RUSSIAN RAILWAY MEDICAL CONGRESS.—This autumn a conference will be held at Kieff of the Russian railway medical attendants, says the *Pharmatzertitcheski Viestnik*, at which will be considered, among other matters, child-births on the railway, overwork on the line, the usual life of railway servants, and mountain sanatoriums near the Transcaucasian Railway for railway servants. Russian railway lines, of course, cover vast distances (though the tracks are few and far between) and the trains often travel slowly, but in spite of both these facts there can be no large number of births in the trains.

New Inventions.

A BELT FOR GASTROPTOSIS.

To remedy gastroptosis many appliances have been invented. The latest is a belt which has been devised by Mr. A. Alison Bradburne, F.R.C.S. Edin. It may be described as follows. There are, in the first place, two thigh-rings formed of rubber tubing covered with flannel. Each of these encircles the upper part of one thigh and forms the *point d'appui* from which the pressure on the abdomen is exerted. To each thigh ring are attached three buckles partly overlapping each other. These buckles look upwards and inwards. To each buckle is attached a piece of



one and a half inch elastic webbing. Each piece of webbing goes from one buckle upwards obliquely across the abdomen towards the opposite side of the body, passes round the body behind, and then again crosses the front of the abdomen to be fastened to a buckle of the opposite thigh ring. In this way the body is encircled by a triple elastic band, but especially at the lower part the pressure is applied. The pressure exerted can be varied at will by tightening or loosening the bands at the buckles. In order to prevent overlapping of the bands at the back there is an arrangement on each side posteriorly for keeping the elastic bands in position.

The advantages claimed for the belt are: (1) its low price; (2) it supports the hypogastric region especially; (3) the parts are all separate and fresh elastic bandages can readily replace those which have become lax or soiled; (4) pressure is kept up, yet movement is not interfered with; (5) the pressure is readily adjustable; and (6) the belt can be taken off and put on again without undoing any strap or buckle.

The belt appears to be well designed; it is comfortable when applied and it should prove of use in many cases in which an elastic abdominal support is needed. Only a prolonged practical experience of the apparatus could make it possible to say in what cases it would be useful but it appears to us to be worthy of trial in gastroptosis and excessive laxness of the abdomen. The belt is made by Messrs. W. H. Bailey and Son of Oxford-street, London, W.

A TONGUE CLIP FOR USE IN ANÆSTHESIA.

AFTER trial of many patterns of tongue forceps for use in anæsthesia, both for keeping the tongue gently drawn forward during operations upon the upper air passages and for emergency purposes, I have found that the one devised by Mr. H. J. Paterson, which is armed with a small spike for insertion through the tip of the tongue, produces less damage to the organ than those which depend for their hold upon the squeezing of the substance. In fact, when it has been sterilised, as it always should be before use, no after discomfort at all is experienced by the patient. In order to avoid certain mechanical difficulties in holding a pair of

FIG. 1.

FULL SIZE

FIG. 2.

forceps in position whilst continuing the administration of the anæsthetic, Messrs. Allen and Hanburys, Limited, of Wigmore-street, London, W., have made for me a tongue clip (Fig. 1) on this principle through which the anæsthetist can pass his thumb while supporting the jaw with the same hand (Fig 2). The tongue clip is also useful in operations upon that organ where it takes the place of a silk ligature and can be applied or released in a second of time.

Mansfield-street, W. H. BELLAMY GARDNER.

THE BRITISH MEDICAL ASSOCIATION.

MEETING AT LEICESTER.

THE SECTIONS.

LARYNGOLOGY, OTOLOGY, AND RHINOLOGY.

THURSDAY, JULY 27TH.

Dr. W. JOBSON HORNE (London) and Dr. S. H. HABERSHON (London) introduced a discussion on

The Treatment of Tuberculous Disease of the Larynx.

Dr. Jobson Horne summarised his address as a plea for the conservation of the larynx by rational therapeutic and surgical treatment based upon scientific research. A lantern demonstration was given of macroscopic and microscopic preparations upon which the argument of the paper was based. To illustrate the importance of a routine examination of the larynx in patients who were phthisical, or when the circumstances of the case required the exclusion of phthisis from the diagnosis, he referred to a clinical and pathological research which he commenced in 1893. The results of that investigation were communicated to the British Medical Association at Edinburgh in 1898[1] and they showed that 97 per cent. of cases of phthisis experienced at one time or another in the course of the disease symptoms referable to the larynx. The investigation went on further to show that the routine examination of the larynx in persons suffering from symptoms suggestive of pulmonary disease would often enable a diagnosis of phthisis to be made at a time when the stethoscope yielded no evidence and at a time when the physician could be of the greatest service to his patient. Side by side with the clinical investigation there was a pathological one on subjects of pulmonary tuberculosis but in whom the larynx after death presented to the naked eye no evidence of disease. The results of that laboratory research showed the frequency of tuberculous lesions in the deeper structures of

[1] THE LANCET, August 20th, 1898, p. 518.

the larynx, fully accounting for the laryngeal symptoms during life. Further investigations conducted on similar lines since had confirmed the conclusion then arrived at—namely, that of the various aids employed in the early diagnosis of phthisis the laryngoscope was deserving of more routine use. Early diagnosis was the all important part of the treatment of the larynx. The laryngoscope, the clinical thermometer, the weighing machine, and the carbol-fuchsin, must be the physician's first aids at a time when he could be useful. The stethoscope was of service in forming an approximate opinion of the extent of the disease but was of very little help in arriving at an early diagnosis, and an early diagnosis was essential to the arrest of the disease both in the lung and in the larynx. The subject was discussed by the section as recently as 1901 when the Association met at Cheltenham; the various therapeutic measures in vogue were then so fully considered that it was hardly necessary to recapitulate them. The multiplicity of those remedies was in itself a sufficient reason for again discussing the subject and for determining the first principles upon which treatment should be based. It was to the surgical treatment and to its limitations Dr. Horne desired more particularly to direct the discussion. A knowledge of the principles that should guide them in the surgical treatment could only be arrived at through work in the dead-house and the laboratory. Accordingly, he opened the discussion with a statement of deductions from post-mortem room observations extending over a period of 12 years. A lantern demonstration was given of (1) certain points in the normal histology of the larynx, a knowledge of which was essential to the understanding of the etiology and treatment of the disease; (2) of the precise manner of infection of the larynx; (3) of nature's method of arresting the disease; (4) of the results of surgical interference with the larynx in which the disease had been arrested; (5) of the part played by the lymphatic system in tuberculous disease of the larynx; and (6) of primary tuberculosis of the larynx. From the foregoing the general principles upon which the surgical treatment should be based, he said, could be deduced. The following general conclusions had been arrived at from post-mortem examinations. 1. When the larynx was infected with tubercle the disease was already established in the lung. Primary tuberculosis of the larynx was a negligible quantity. 2. When the disease in the lung was confined to the pure miliary form the larynx was not infected. 3. The disease in the larynx progressed, *pari passu*, with that in the lung—i.e., by the time the disease in the larynx had advanced to ulceration that in the lung had advanced to cavitation; *vice versâ*, when the disease in the lung became arrested that in the larynx also became quiescent. 4. Infection of the larynx took place through the sputum from the lung. The point in the normal histology which Dr. Horne considered to be essential to the understanding of the matter was the distribution of the glandular structure in the submucosa and of the two varieties of epithelium met with—namely, the columnar and the squamous celled. It was demonstrated that the parts richest in glandular structure were the inter-arytenoid space, the arytenoid region, the ventricular bands, and the tip and the cushion of the epiglottis. These parts, with the exception of the epiglottis, were covered with columnar epithelium, whereas the cord itself, or that portion of it which Dr. Horne described as the essential part of the cord—namely, the part anterior to the vocal process—was free from glandular structure and was covered with squamous celled epithelium. The parts of the larynx most prone to infection were those richest in glandular structure; the essential part of the cord possessed the greatest resisting power. Specimens were demonstrated in which that part of the cord had escaped when all the surrounding parts had ulcerated away. Further, the squamous celled epithelium, as compared with the columnar celled, afforded protection. In the natural process of arrest (pachydermia laryngis tuberculosa) a metaplasia from the columnar to the squamous variety took place. The junction of the middle with the posterior third of the cord—i.e., immediately behind the vocal process—was the most vulnerable spot, being a point against which the sputum was brought into contact, a point exposed to stress and strain in vocalisation and one richest in glands. Speaking of the precise manner of infection Dr. Horne said the suggestion that the tubercle bacillus gained admission between the cells of the epithelium—i.e., intracellular infection—was unnecessary. He demonstrated specimens showing the path of infection to be the ducts leading from the surface down to the acini. The disease commenced in the submucosa and in treatment the main aim should be to assist nature to bring about an arrest of the disease with the smallest amount of destruction of the larynx. At the Portsmouth meeting of the Association in 1899 he had demonstrated that pachydermia laryngis tuberculosa constituted the natural process of arrest. The hyperplasia and metaplasia of the epithelium and the accompanying fibrosis in the submucosa constituted a remedial process, which was to be hoped for and encouraged, and one which surgery could not assist. In 1899, and again at Cheltenham in 1901, he had urged that in the more chronic forms of the disease in which thickening of the mucous membrane occurred without ulceration it was irrational to cause a breach of surface by curettes and cutting forceps. Linear incisions made with a sharp knife in a longitudinal direction he had found useful in reducing œdema and chronic thickening, but an open breach of surface by curettes or forceps was liable in a case of arrested laryngeal and pulmonary disease to cause infection of the cervical lymphatic glands and the further spread of the disease. From the pathological facts submitted it became evident that, first and foremost, it was imperative to treat the patient and not only the larynx. Remedies directed towards rendering the lungs themselves aseptic and towards the destruction of the tubercle bacillus, such as inhalations and intratracheal injections, when efficiently carried out were of considerable value in preventing infection of the larynx. Sanatorium treatment both directly and indirectly benefited laryngeal disease; it improved the pulmonary condition and reduced the frequency of laryngeal complications; it afforded rest of voice and promoted healing of laryngeal lesions. Local applications were both palliative and remedial and should form part of the sanatorium treatment. In the more advanced cases surgical measures might be necessary; an enlarged epiglottis might have to be reduced or removed; œdema of the larynx could be overcome by linear scarifying, infiltrated and thickened parts might be incised, indolent ulcers curetted and treated with lactic acid, but lactic acid applied to an unbroken surface was of no avail and only caused distress. The surgical treatment of the disease had its limitations and within those limitations Dr. Horne had undoubtedly seen benefit afforded, but the extreme surgical measures which had been advocated by some for the extermination of the disease could not be regarded as remedial; at their best they were only mechanical means of overcoming physical difficulties which comparatively seldom occurred.

Dr. HABERSHON referred to the early views as to the nature of tuberculous laryngitis held by Galen, Morgagni, Petit, and Laennec. Speaking of the mode of onset, he referred to the theory of Louis—the corrosive action of the sputum; to that of Rheiner—ulceration as a result of friction of the cords and other parts of the larynx due to incessant cough; and to that of Mackenzie—infection of the larynx being due to some special weakness or susceptibility. Of these several theories he supported the last. He recognised two forms of early laryngeal tuberculosis, the anæmic larynx and the catarrhal. The situation of early lesions was dependent on the nature of the epithelium and epidermal structure. Early invasion only occurred in parts of the larynx covered with squamous epithelium and provided with papillæ, the ciliated epithelium was protective. A catarrh of the larynx preceded and influenced the tuberculous invasion. Treatment was prophylactic and local and the general nutrition should be improved. In conclusion, he spoke of the importance of open-air treatment and absolute rest of the larynx by silence.

Dr. STCLAIR THOMSON (London) thanked the introducers of the subject for their addresses and expressed himself in accordance with their views. He agreed that infection of the larynx took place from the lung and cited Jonathan Wright's dictum that for the larynx to become infected the tubercle bacillus must descend into the lung and be born again. As regarded the precise manner of infection—namely, through the ducts of the glands opening on to the surface of the larynx, as demonstrated to them by Dr. Horne—he thought that possibly might not be the only path of infection. He cited cases which were exceptions to the statement made by Dr. Horne, that the disease in the larynx advanced and improved *pari passu* with the advance and improvement of the disease in the lungs. There had been a considerable change of opinion as regarded the treatment. Morell Mackenzie, with a vast experience, had expressed doubt whether any of the cases were really cured. The hopes held out by the ardent supporters of surgical treatment had not been realised. There had been a good deal of loose talk

amongst enthusiasts of recovery and of how untreated cases went down hill more rapidly than those treated. They had all obtained a few brilliant results occasionally but to operate upon an unbroken surface within the larynx could do nothing but harm. The application of caustics and curettage to shallow ulcers was at times useful. The general treatment was of first importance. Sanatorium treatment initiated natural methods of arrest and they could be assisted by curettes and caustics. The indications for the treatment of the larynx were to be found in the condition of the lungs and of the patient; if the pulmonary disease were arrested then the larynx might be attacked boldly.

Mr. HAROLD S. BARWELL (London) read a paper on

The Choice of the Method of Treatment in Cases of Tuberculous Laryngitis, with a Plea for the Routine Inspection of the Throats of Consumptive Patients.

Their aims, he said, were limited by the possibilities of the case and were of three kinds: (1) to cure the patient completely; (2) to heal the laryngeal lesions; and (3) merely to treat the symptoms and relieve suffering. The patients might be divided into groups corresponding to the results they might reasonably hope to obtain. In the first group were those cases in which the lung disease was in an early stage and not progressing rapidly, and even the somewhat more advanced cases if they showed a tendency to improve. The second group included the majority in which the lung disease was so far advanced that a definite cure could not be expected but without the adverse symptoms of the third group. The third group consisted of the hopeless cases in which even local cure could not be expected. The treatment suitable to the cases in these three groups was considered and from these considerations he concluded that if severe symptoms such as dysphagia and obstructive dyspnœa were present, the only contra-indication to active treatment was such extreme weakness as to render the patient unable to withstand the slight shock of operative measures. In conclusion, he urged that in all cases of consumption the larynx should be inspected at regular intervals and as a matter of routine for the following reasons: tuberculous laryngitis was common to all stages of phthisis, it might cause no symptoms to attract attention, the early stages were much more amenable to treatment, and it produced one of the most painful and distressing forms of death.

Dr. N. C. HARING (Manchester), resuming the discussion, commented on the difference in the tone of the opinions since the subject was discussed by the Association at Cheltenham in 1901. Gentlemen on the present occasion had not brought with them those large instruments for the removal of the laryngeal disease bodily. Treatment must be mainly directed against symptoms rather than towards curing the larynx; that must be left to the sanatorium, inasmuch as the laryngeal disease was so closely associated with the pulmonary disease. The lactic acid treatment he had found disappointing and large operations upon the larynx were commonly contra-indicated by the pulmonary conditions.

Dr. R. H. SCANES SPICER (London) expressed his appreciation of the views put forward by the introducers of the discussion. The cures that had been promised in the past by severe surgical treatment had not been realised. He was doubtful about the benefit to be derived from local treatment other than a modification of that applicable to all septic cases. The larynx and lungs, when the sites of tuberculosis, formed one septic cavity, and their treatment should be directed towards cleanliness; he agreed that the general treatment was of first importance.

Mr. L. A. LAWRENCE (London) advocated a more routine examination of the larynx in cases of pulmonary tuberculosis.

Dr. J. DUNDAS GRANT (London) pointed out that Heryng, who was one of the first to advocate a more thorough treatment of the larynx, had drawn his material from a totally different class of patients who were more tolerant. Dr. Grant had found that local treatment afforded considerable relief in suitable cases. Auto-insufflation of the larynx with antiseptic or sedative powders and complete rest of voice were to be recommended.

Dr. P. WATSON WILLIAMS (Bristol) spoke in favour of rest of the voice.

Dr. W. S. SYME (Glasgow) considered that surgical treatment of laryngeal tuberculosis was not indicated owing to severe disease of the lungs. The cough must be relieved to insure rest to the larynx.

Dr. H. SMURTHWAITE (Newcastle) said that his experience of the surgical treatment of laryngeal tuberculosis had been decidedly unfavourable.

Dr. ADOLPH BRONNER (Bradford) was in favour of the application of formalin to the larynx. The surgical treatment he looked upon as on the decline.

Dr. ATWOOD THORNE (London) was opposed to the surgical treatment of tuberculosis of the larynx in hospital out-patient departments.

Mr. G. JACKSON (Plymouth) referred to the rules at many sanatoriums against the admission of patients with tuberculous disease of the larynx and desired to hear from the openers of the discussion their views on that point. Personally he was opposed to local treatment apart from general treatment as carried out in sanatoriums.

Mr. JOHN BARK (Liverpool) regarded local treatment as of great use in the quiescent cases. He also spoke of the possibilities of thyrotomy.

Dr. JOHN MIDDLEMASS HUNT (Liverpool) spoke in support of active treatment of laryngeal tuberculosis; the untreated cases he found deteriorated more quickly than the treated; the larynx should not be neglected so long as it was possible to relieve suffering.

The PRESIDENT of the section, Dr. F. W. BENNETT (Leicester), in summing up the discussion, said that the general opinion was against too much local interference and in favour of general treatment and, above all, rest. He regretted that the time at their disposal would not allow the openers of the debate to reply adequately to the several views which had been expressed and so he had decided to adopt the unusual course of asking them to forward their replies to the secretaries.—That course was agreed to.

Dr. HERBERT TILLEY (London) read a paper on

The Symptoms, Diagnosis, and Treatment of Chronic Suppuration of the Sphenoidal Sinus.

He demonstrated by means of diagrams and specimens the method recommended by Dr. Hajek of Vienna for investigating the sphenoidal sinus and for differentiating suppuration in the posterior ethmoidal cell from that within the sphenoidal sinus. He also demonstrated the instruments designed by Dr. Hajek for the treatment of the sinus. Dr. Tilley gave a brief account of some cases of sphenoidal sinus suppuration which had been under his own care and considered that the treatment of the disease presented no greater difficulty than that of the frontal sinus.

Dr. HORNE also expressed his indebtedness to Dr. Hajek. He inquired of those present whether their experience coincided with his own—namely, that suppuration in the sphenoidal sinus was tentatively diagnosed more often than it existed, the posterior group of ethmoidal cells being more commonly the seat of the disease. The instruments which Dr. Hajek had placed at their disposal, cutting only when drawn towards the operator, afforded the maximum amount of safety. Dr. Horne had found in his own cases that much in the way of curettement within the sinus itself was seldom called for once the opening was sufficiently enlarged to permit of drainage; in one case syringing through the natural opening was sufficient. He referred to the dry and glazed appearance which the pharynx presented in such cases which was commonly more marked in the upper part of the naso-pharyngeal wall on the affected side.

Dr. BRONNER spoke of the ocular symptoms at times associated with sphenoidal sinus disease and its possible connexion with optic atrophy.

Dr. STCLAIR THOMSON preferred to operate with a sponge in the post-nasal space. He was not so fearful now of sphenoidal sinus disease as he was of frontal. At one time he was more ready to deal with the latter than the former. Care should be exercised not only in the recognition of disease in the posterior ethmoidal cells but also in the treatment of the same, so as to avoid starting an acute sphenoidal sinusitis. The appearance of the ostium sphenoidale had been likened to that of the meatus urinarius.

Dr. L. H. PEGLER (London) spoke of the association of atrophic nasal disease with suppurative disease of the sphenoidal sinus.

Dr. WATSON WILLIAMS described a method of investigating the sphenoidal sinus by means of an aspirating needle.

Dr. HARING discussed the frequency of the occurrence of sphenoidal disease.

Dr. TILLEY, in reply, said that he did not plug the post-nasal space in the treatment of these cases and he considered that sphenoidal sinus suppuration did not cause genuine atrophic disease.

FRIDAY, JULY 28TH.

The first part of the morning was devoted to the reading and discussion of papers.

Dr. SMURTHWAITE read a paper on

The Submucous Resection of the Nasal Septum.

Dr. PEGLER communicated a note on

The Comparative Value of the Moure and the Fenster Resection Types of Operations for Deflection of the Nasal Septum.

At half-past eleven the section adjourned to that of State Medicine to take part in a combined discussion opened by Dr. WATSON WILLIAMS and Dr. DAVID S. DAVIES (Bristol) on

What is Notifiable Diphtheria?

Dr. Watson Williams referred to the varying degrees of severity observed clinically in diphtheria, from the slightest departure from normal health with no characteristic local lesion to the typical manifestations of acute virulent infection with or without characteristic local lesions. There was no correspondence in the severity of clinical symptoms and virulence of the infection or in the virulence and morphological type of diphtheria micro-organism. He subdivided the cases into three groups: (1) patients who suffered from none of the usual clinical indications of diphtheria and yet were ill and had nasal catarrh, membranous rhinitis, facial redness, and slight subacute tonsillitis, and which a bacterioscopical examination proved to be diphtheritic; (2) cases with any of these diphtheritic lesions, but with no general symptoms of ill-health; and (3) persons who presented no local lesions and no departure from normal health but in whom bacilli had been found by culture tests. The existence of diphtheritic organisms in the nose or throat of a normal person who had not recently contracted or suffered from clinical diphtheria did not, *per se*, constitute notifiable diphtheria or necessitate isolation, except in schools or aggregations of children. Hoffmann's bacillus was a non-pathogenic micro-organism, unproductive of clinical symptoms, and its presence in the nose and throat did not justify isolation. In practice, while deriving all available assistance from bacteriology, they must depend largely on clinical conditions.

Dr. DAVIES, in his opening address, described the methods adopted in the city of Bristol during the invasion of virulent diphtheria (1900–04). There the finding of the Klebs-Löffler bacillus in the absence of clinical symptoms was generally held to warrant notification with the concurrence of the medical attendant. Technically such contacts were not suffering from diphtheria; they were only carrying it, so notification could not be enforced. The view adopted for practical purposes in regard to these suspicious forms was that where they were found during the prevalence of diphtheria in virulent form in close association with undoubted cases of diphtheria—that is, among close contacts at home or at school—they were potential sources of infection, probably not in every case but in a sufficient number of cases to make it essential not to neglect them. In these cases, whether notified or not, school attendance was inhibited; but these cases were not generally admitted to hospital, but in exceptional circumstances had been and had taken no harm. They were not treated as coming within Section 126 of the Public Health Act. Local treatment was considered to be suitable and was secured either through the medical attendant, or more commonly, in working-class districts, by establishing an out-patient surgery in charge of a trained nurse under the supervision of an assistant medical officer of health. There "suspicious" cases were carefully syringed and sprayed in the nose, the throat, or the ears as often as might be necessary, periodical assays of their condition being made bacteriologically.

Dr. JOBSON HORNE cited a fatal case in which cultures repeatedly made from the fauces during life yielded no diphtheria bacillus, but after death he made cultures from material taken from one ventricle of the larynx and grew the Klebs-Löffler bacillus. The responsibility for the diagnosis should not be placed upon the bacteriologist: he could only pronounce upon the material submitted to him. Dr. Horne also cited the case of an adult, a schoolmistress, who enjoyed good health, apart from slight periodic attacks of sore-throat which occasioned little or no inconvenience and did not necessitate work being given up. It was proved that this throat was the starting-point of an outbreak of diphtheria in a school. The tonsils and fauces of people subject to sore-throats and in contact with children he considered should be treated by curettement, morcellement, or otherwise so as to prevent the parts from becoming a suitable nidus for micro-organisms.

Dr. SCANES SPICER considered that it would be impossible to notify all doubtful cases in a general hospital out-patient department.

Dr. T. F. S. CAVERHILL (Edinburgh) spoke of an increase of diphtheria in spite of precautionary measures and a free supply of antitoxin.

Dr. F. H. JACOB (Nottingham) considered that Hoffmann's bacillus was as prevalent in the noses of children as the bacillus coli commune in the intestine.

Dr. H. PEGLER spoke in favour of suitable treatment of the tonsils with a view of preventing their harbouring bacilli.

Dr. F. W. BENNETT (Leicester) inquired whether greater power should be given to medical officers of health and whether grading the potency of cases was likely to lead to any beneficial results.

Dr. P. BOOBBYER (Nottingham) spoke of the difficulty with nasal cases which could not be classed as diphtheria and could not be placed in wards with other patients.

The openers replied. Dr. DAVIES had found that the powers already given to medical officers of health were sufficient with the coöperation of the medical attendant.

TROPICAL MEDICINE.

FRIDAY, JULY 28TH.

Lieutenant S. R. CHRISTOPHERS, I.M.S., and Dr. J. W. W. STEPHENS (Liverpool) sent a

Note on a Peculiar Schistosomum Egg

found in the urine of a Madras native suffering from hæmaturia. The egg in this case differed from that of the schistosomum hæmatobium seen in the urine of soldiers who had spent some time in South Africa. The striking peculiarity of the eggs of the species described by Lieutenant Christophers and Dr. Stephens is in their long spindle-like appearance (length, 54 divisions = 205 2μ; width, 14 divisions = 53·2μ), the thick end of the egg being prolonged into a long snout-like process. That the egg betokened a new schistosomum could not be positively stated, as to judge by the egg alone was liable to lead to error.

Captain LEONARD ROGERS, I.M.S., sent two papers:—

1. *Blood Counts in Acute Hepatitis and Amœbic Abscess of the Liver, with further experience of the relationship of the Amœba Dysenterica to Tropical Liver Abscess.*

Captain Rogers stated that absolute leucocytosis was nearly always found in amœbic abscess of the liver, but in chronic cases with marked anæmia only a relative leucocytosis was usually found. The degree of leucocytosis was variable, being highest in most acute cases. In acute hepatitis with suppuration both absolute and relative leucocytosis were nearly always absent. Captain Rogers also gave details of a case of single tropical abscess of the liver in which no amœbæ could be found post mortem, although the patient had suffered from amœbic dysentery. He also described a case in which triple tropical abscess of the liver with no amœbæ in one of the abscesses, and although no history of dysentery was obtainable the large intestine showed both recent scars of ulceration and long transverse slit-like healing ulcers. He was of opinion that the abscess in which no amœbæ were present was the older abscess of the three, that the amœbæ within it had died out, and that the two in which amœbæ were found were of more recent formation.

2. *Two Further Cases of Snake-bite successfully treated by Local Applications of Permanganate of Potassium,*

with suggestions for extension of its use. He advised the local application of permanganate of potassium to the seat of a sting by scorpions; as a means of preventing the tetanus infection of dust-laden wounds; as a useful application in wounds inflicted by wild animals, such as leopards; and in wounds inflicted by rabid, or supposed rabid, animals. Captain Rogers suggested that crystals of permanganate of potassium or a very concentrated solution of the salt should be instilled into the depths of the bites and wounds preferably after they had been enlarged with the knife.

THE LANCET.

LONDON: SATURDAY, AUGUST 26, 1905.

The Registration and Inspection of Nursing Homes.

ONE of the results of modern advances in methods of treatment and of the improvements in nursing has been to render it a matter of increasing convenience to treat cases of serious illness, as well as those cases requiring operative measures, in some form of institution specially adapted for the purpose; indeed, except in the case of the rich it is often a matter of great difficulty or impossibility to carry out the treatment of such cases at the patient's own home. The infirmary, hospital, or other eleemosynary type of institution has supplied the wants of the poor in this respect; while to meet the requirements of other classes of the community nursing homes have arisen which are to all intents and purposes hospitals for paying patients. The advantages of a well-managed nursing home are obvious; it should be an establishment which is specially contrived for the comfort and the care of the patients, so that the accommodation, the feeding, the nursing, and the treatment can be most suitably and effectively carried out. That the patients are always under skilled supervision and that in these days of more general adoption of telephonic communication by medical men in case of emergency the practitioner in charge of the case can be summoned are additional advantages. Again, in some cases requiring special methods of treatment, such as those that are loosely referred to as constituting the Weir-Mitchell system, the discipline and the routine of the nursing home are essentials in the treatment which it is impossible to obtain elsewhere. These are among the obvious advantages of such institutions, and it is clear that they will only obtain if the nursing homes are in reality what they profess to be. But while large numbers of such homes are well managed and give satisfaction both to the patients treated in them and to the medical practitioners recommending them, it cannot be denied that masquerading under the same name there are institutions of far less meritorious character in which the conditions as regards cleanliness and sanitation are not of the best and where the diet, nursing, and comfort of the patients leave much to be desired. This is especially the case in some so-called maternity homes as well as in institutions for the reception of chronic medical and surgical cases. Many of these establishments are practically free from professional visitation, medical advice being sought only when it is urgently needed or unavoidable. The scandals or disclosures occurring from time to time in connexion with some of these places no doubt affect unhappily the reputation of nursing homes in general, as we have on more than one occasion said in our columns. How far would registration and inspection of nursing homes remove the abuses?

In commenting on some remarks made by Sir HENRY BURDETT[1] on the frequent inadequacy and the insufficient supervision of certain institutions for chronic cases, we ventured to advocate some general system of supervision of private nursing homes. In our issue of Feb. 7th, 1903 (p. 399), we published a letter from the matron of a suburban nursing home endorsing our view as to the need of some such supervision or legislative control. In the same year a paper of considerable interest was read before the congress of the Sanitary Institute at Bradford by Miss E. MARGERY HOMERSHAM[2] on the Registration and Inspection of Nursing Homes. The paper forms a valuable and suggestive contribution to the subject and coming from one who has had experience of the nursing aspect of the matter the suggestions offered are well worthy of careful consideration. Briefly summarised they are: registration and scheduling of all houses where medical, surgical, nervous, infirm, chronic, or maternity cases are received in return for monetary payments; the vesting of the executive control of each such establishment in one person who should be answerable for all legal matters connected with it and be responsible for the filling up of any registers or returns which may be determined to be necessary; and lastly, the inspection of these homes from time to time by some person in authority. We do not propose here to refer to the large question of the registration of nurses, but are dealing only with the advisability or otherwise of registering and inspecting nursing homes. With regard to such registration and inspection there can be no difference of opinion, provided that the conditions of registration are such as to guarantee that the building itself and the sanitary, domestic, and nursing arrangements are satisfactory. Such a scheduled list of registered homes would be of great value and would be very beneficial to the interests of the reputable type of institution. The control and the management of the institution would be simple enough and the filling of returns would be a matter easy to arrange for. But the question of inspection is a much more difficult problem, although without some form of official visitation registration would be a useless formality. Inspection would doubtless be opposed by the owners or the matrons of many homes, especially upon the grounds of the intrusion on the privacy of the patients and of the difficulty of attending the inspector when the matron and staff happen to be engaged at operations or waiting upon the medical practitioners who might be visiting their cases. Most innovations of this kind, however, though generally feared and often condemned beforehand, if they are carefully conceived and worked out, prove to be less irksome and inconvenient in practice than in theory, as witness the notification of infectious diseases and the visitation of lunatic asylums. In any case, the suggestion is made entirely in the public interest and far from being prejudicial to the interests of the nursing homes should redound to their advantage. Such a control is exercised in the case of infirmaries by the Poor-law authorities and in the case of hospitals by the lay boards of those institutions and in London by the executive of King Edward's Hospital Fund. In any proposals with regard to registration and inspection we should

[1] THE LANCET, Oct. 25th, 1902, p. 1140.
[2] Journal of the Sanitary Institute, vol. xxiv., p. 649.

like to see sanatoriums and colonies for the treatment of epileptics included and also all homes for massage or other special modes of treatment. At some of these institutions we gather that in return for a given sum instruction is given in massage to persons who have received no general nursing training whatever and who, after a course lasting in some cases about a fortnight, are let loose on the public as qualified masseuses. This is an imposition both on the public and on those who are inveigled into such inadequate courses of instruction by the prospects held out of remunerative employment. Massage should be an essential part of a nurse's training and should no more be regarded as a special occupation than the making of a poultice, or the administration of a medicine ordered by the medical practitioner, nor should the application of massage be intrusted to other than fully trained nurses. Registration and inspection would serve as safeguards against shams and quackery of this kind and would afford the public and the medical profession a very desirable guarantee of genuineness.

To determine to whom the task of inspection should be intrusted is a matter requiring careful consideration. Miss HOMERSHAM suggests that the county and borough medical officers of health would be the most suitable officials to undertake these duties in existing circumstances. There is much to be said in favour of this proposal, for they have large experience of similar duties, they are accustomed to exercise authority with tact and discretion, and they understand professional ethics. In fact, the only objection to it is the additional work it would entail upon those officers whose time in most instances is already fully occupied. In one of the British colonies a medical inspector-general of hospitals was appointed to undertake analogous work with a fully trained nurse under him as an assistant inspector. A scheme involving similar appointments in this country would be worthy of consideration and might prove to be a very satisfactory solution of existing difficulties. In any case, since the matter concerns the welfare of a considerable section of the public, it is one which must sooner or later be dealt with and the owners of nursing homes and those responsible for their management will do well to further rather than to neglect or to obstruct the reforms suggested.

Difficulties under the Vaccination Acts.

COMPLAINTS reach us so frequently of the difficulties which occur between public vaccinators and private practitioners in their districts that it is imperative to examine some of the causes of friction. And we may start by saying that, though sometimes the fault is on one side and sometimes on the other, in many instances ignorance of the duties and procedure imposed on the public vaccinator by statute leads to criticism of his conduct. The vaccination officer's duties are definite. He has to prepare at short intervals lists of all infants in his districts who have attained the age of four months and who remain unvaccinated. These lists are sent to the public vaccinator who then sends notices to the parent stating that on such a day he will call and will offer to vaccinate the child. If the offer is accepted he vaccinates the child. He is obliged to revisit his patient at least once and if any further attention to the arm is required he is obliged to render it without additional fee. From the evidence taken by the Departmental Commission of 1903 and from other sources of information it is clear that attempts are frequently made by the poorer classes to extend the scope of the public vaccinator's gratuitous discharge of duty, particularly in the case of eczema. Public vaccinators are expected by many of the poor to treat cases of chronic eczema during the first and second years of life because the parents choose to assume that the eruption is the result of vaccination. A difficulty of another sort is at once introduced if the child is not fit to be vaccinated, for the public vaccinator is legally obliged to certify the child's unfitness for the operation. It is seldom possible for the public vaccinator to persuade the parents to send for their own medical man to certify to the unfitness (with the prospect of paying a fee) when they can get the certificate for nothing from the public vaccinator, and at once the latter, against his wish, is made to supersede the private medical adviser.

An opening for further disagreement between practitioners has been made by an unfortunate lack of precision in the wording of one of the most important instructions to public vaccinators. The General Orders of the Privy Council (Vaccination Acts, 1867 to 1898, amended Oct. 18th, 1898) contain in Section II. of Schedule I. the following "Duty" to be performed under contract:—

"In the case of every child resident in the district who has reached the age of four months and as to whom he has received the requisite notice from the vaccination officer he (the public vaccinator) will visit the home of the child within two weeks after receipt of the notice and offer to vaccinate the child with glycerinated calf lymph or such other lymph as may be issued by the Local Government Board, *and if his offer is accepted will thereupon (or after such postponement, if any, as may in his opinion be necessary) so vaccinate the child.*"

The italics are our own and they are designed to contrast the precision of the first part of this instruction with the laxity of expression of the latter part. Are the last lines of the section intended to instruct the public vaccinator that, after having postponed vaccination once, it is his duty to call again at the expiration of the term of validity of the postponement without any summons from the parents or without any private arrangement with them having been made at the first call? Many public vaccinators urge that this duty is enforced upon them by the section which we have quoted. They may possibly be right, but the phraseology is so incomplete and ambiguous that to urge the claim is to strain the wording of the Order. Until an authoritative ruling on the point is obtained from the Local Government Board (for no one is likely to apply to a court of law for a decision) it would be at least an act of grace on the part of the public vaccinators not to make too rigid an application of the clause, for considerable irritation is caused already in the minds of many general practitioners by this interpretation of the duty of the officials. The "following up" of vaccination cases not unnaturally rankles in the minds of the public vaccinator's professional neighbours. Admitting our view of the section of the Orders in Council which we have quoted

above the public vaccinator should not, in strict ethics, repeat his visit until summoned. This would, however, involve two results—one, a fine on the public vaccinator who gets no fee for his visit unless he ultimately vaccinates the child; secondly, a higher proportion of "escapes cases" which elude vaccination, a result by no means to be desired by the country at large and one which under the present system of payments would further reduce the public vaccinator's earnings by depriving him of any chance of a "grant for efficient vaccination," the bonus which is paid at intervals by the county councils for good vaccination results. Undoubtedly public vaccinators are officials intrusted with a part of the practical working of an important system and it is a duty to the State to maintain a high numerical standard of vaccination in spite of the fact that the weakness of modern legislation has rendered the task so difficult. If public vaccinators rigidly refrained from following up unvaccinated children either the proportions of "escapes" would rise to a dangerous level or the number of vaccination officers would have to be increased, for a large proportion of compulsion work would be thrown into the hands of the lay officials. It is doubtful if this transference of discretion would decrease the friction in the working of the Act, as unquestionably the working-class public resents the interference of the vaccination officer more than that of the public vaccinator; the latter is only "a doctor," the former is classed in the public mind with other such official pests as school board officers, sanitary inspectors, and rate collectors. In country districts—where the vaccination officers are active and on better general terms with the lower classes than the more independent, perhaps more suspicious, populace of the towns permits them to be—it might be safe to leave the execution of the Act entirely in the hands of these officers. But in populous centres, where removals are so frequent and the difficulties of tracing removals are so great, it would be dangerous to the efficiency of vaccination to preclude public vaccinators from following up cases. But they and the vaccination officers must act discreetly when so doing.

To some of our readers we may appear to have "led them out into the desert and left them there," for we have said little or nothing of what may be done to cement the cleavages between private practitioners and public vaccinators in the varied directions which these cleavages have taken. It is, as a matter of fact, impossible to solve in a few lines problems which are based on the varying factors of temper, tact, and forbearance. Let the public vaccinator "think imperially"; let him try to place before the immediate small fee which a visit may divert from the earnings of another man the discredit which may be cast on a great public service—a discredit which will in the long run recoil upon his own head to his own professional loss. On the other hand, all general practitioners would do well to learn about the duties and methods of the public vaccinator's work. Because by the provisions of the Vaccination Act of 1898 a large amount of the vaccination of the country is thrown into official hands the public vaccinator must not be held responsible if he is only obeying the duties imposed upon him. To throw obstacles in the performance of those duties is neither to be generous to a brother practitioner nor to serve the interests of the country whose health is our concern. But conversely the public vaccinator who uses his official position to advance himself to the detriment of his professional brother is guilty of serious misconduct.

Physical Stock-Taking.

ALTHOUGH August and September have now become universally regarded as being *par excellence* the two months of holiday, yet the widespread recognition of the claims of recreation has left no month of the year devoid of its pleasure seekers. Where a century ago only a comparatively small number of the more privileged and well-to-do classes sought the health-giving properties of mountain, country, and seaside, to-day we have the spectacle of every employé claiming, and being allowed as his just and reasonable due, his annual respite from the desk or counter. Where holiday makers were once numbered by the hundred to-day they are to be reckoned in thousands, and at their call a whole class has arisen which subsists entirely upon the profits obtained by catering for their enjoyment. All round our coasts there are towns and villages which are purely the offspring of the fresh-air hunger of to-day. Fortunes have been, and are still being, made by the promotion of organised travel and personally conducted tours, and where an annual holiday was once considered as a luxury it has long ago come to be recognised as the modern worker's legitimate demand. It is true that here and there men are still to be met with whose boast it is that they have never taken a holiday; but they are few and far between, and it is an open question whether the superior application to labour upon which they pride themselves has a proportionate result in the efficiency with which it is performed. For our part, we think it is an indisputable fact that the more strenuous lines on which the lot of the twentieth century worker is laid have necessitated the breathing space which the regular holiday supplies.

The restless energy and watchfulness with which modern supremacy to-day is alone to be won and maintained, the increased facilities of intercommunication between individuals and nations, with the added responsibilities that this has brought about, cannot but have an effect upon the present generation who work under conditions of competition that were undreamed of by our forefathers. Fatigue was once popularly regarded as being solely a matter of muscles; it is to-day a phenomenon associated as much in the lay mind as in the medical mind with a mental condition, and it is brain-weariness that sends men to the moors and rivers for a suitable antidote in physical exertion and that empties office-stools upon the sands. Among the manifold forces of civilisation that have wrought this result there can be little doubt that the higher education of to-day has played a prominent part, rendering us far more sensitive to intellectual languor, more easily fatigued in brain, and more open to fatiguing sensations. Bearing all this in mind the medical man will do well to regard in their true light the efforts of nature to explain that mental rest is required. The craze for athleticism, physical culture, and strange dietary reforms have their deleterious sides—no one knows that better than medical men. But we must not be in too great a hurry to condemn the spirit which seeks solace in such directions merely because much quackery is here prepared

for public use. We must not lose sight of the fact that the preservation of national physical virility is a national duty, and that we moderns have to perform that duty under new and exacting conditions.

Mr. H. G. WELLS has depicted for our consideration the hypercephalic man of to-morrow, but to-day the world is still young enough to find a joy in its muscles; physical energy is as potent a factor of success as it has always been; while at our hand there are still innumerable individual examples—and in the Far East an unmistakeable national one—that the union of the healthy mind in the healthy body must still take place in any race that would be dominant in all the fields of progress. There are numerous brilliant instances in which mental work of the highest order has been carried out under the greatest bodily disability; and the healthy body is not necessarily a body tuned to its highest possibilities of physical endurance, but, granting this and all that it implies, the fact remains that the efficient nation must be the healthy nation. It is useful that there should be times when men can endeavour to realise the measure of vigour of which their frames are capable. The consciousness of physical capacity, even though circumstances prevent its perpetual maintenance at the highest pitch, will go far to preserve a healthy equipoise of mind and body. On the other hand, the discovery of failing physical power will often lead a man at a critical moment in the history of some unsuspected pathological condition to take medical advice. The holiday instinct is after all an elemental call to fresh air and exercise, to healthy hunger and thirst and sleep, which has merely become more clamorous of late years as a protest against the raids upon human endurance created by modern conditions. We should not be deaf to the call. As to the nature of a holiday, of that each man must be his own judge within limits. It is idle to lay down any axiom—even the oft-repeated statement that the truest holiday is that which forms the most complete change from the everyday groove is not necessarily accurate. It is, for example, foolish of the mountaineer to start upon great ventures when fresh from his desk. He may say that in doing so he is exactly taking that stock of his physical capacity which we suggest is useful, but he is doing so in a foolish manner. The holiday must be planned so that it is a source of refreshment, no immoderate athleticism should be allowed to make it a cause of future fatigue.

Annotations.

"Ne quid nimis."

WEIGHING v. MEASURING AS APPLIED TO THE DISPENSING OF MEDICINES.

IN this country it has been the custom in dispensing medicines to follow the rule: Solids by weight, liquids by measure. This practice is opposed to the continental method of weighing all ingredients of prescriptions whether they be in a solid or a liquid form. In the 1898 edition of of the British Pharmacopœia established custom was very generally followed, but in a few instances it was departed from. Thus glycerine was directed to be weighed in preparing glycerine suppositories and glycerine of boric acid, whereas a measured quantity was indicated in the case of glycerine of pepsin. Liquefied honey afforded another instance of lack of uniformity, the official directions indicating a weighed quantity in the preparation of oxymel and a measured quantity in the case of oxymel of squill. Both glycerine and liquefied honey are viscid liquids and there are obvious advantages in weighing them while preparing medicines of which they form the vehicle, owing to the difficulty of removing the whole of the liquid from the measure. This difficulty was not taken into account, however, in the official directions for preparing flexible collodion as the collodion was directed to be measured. But in other cases where the vehicle is a less viscous liquid—e.g., water—this difficulty is not observed, since the measure may be subsequently rinsed out with water, thus preventing any loss of viscous liquid. A curious instance of inconsistency is afforded by glacial acetic acid, which in the Pharmacopœia was directed to be measured in making vinegar of cantharides and weighed in the case of acetic liniment of turpentine. It would seem, therefore, that there was a leaning on the part of the compilers of the Pharmacopœia to the idea that liquids can be weighed as accurately as they can be measured. In view of this question being raised in connexion with the preparation of a new edition of the British Pharmacopœia it is desirable that the opinion should be asked of those who have had training and experience in both systems—namely, the proprietors of English pharmacies on the Riviera. The opinion of these pharmacists would be found to be entirely in favour of measuring liquids in dispensing. The chief objection to weighing liquids is the danger of adding too much of the ingredients, in which case the mixture is wasted or else sent out wrongly dispensed. Again, in certain combinations the ingredients require to be diluted before mixing them. This is readily done when the ingredients are measured. It would be impossible always to weigh accurately into the medicine bottle on an ordinary dispensing balance very small doses of potent liquids. But finely graduated minim measures may be obtained to deliver from one minim upwards. The following prescription will illustrate the advantage of the present method of measuring liquids over the continental method of weighing: "℞. acidi hydrocyanici diluti ♏ vi, glycerini ℥iii, aquam ad ℥iii, fiat mistura." It is perfectly easy to measure the glycerine, to rinse out the measure with water, then almost to fill the bottle with water, and finally to add the six minims of prussic acid carefully measured in a minim measure. But, on the other hand, it is safe to predict that not one dispenser in ten would weigh these liquids with accuracy. From all points of view it is desirable, in our opinion, that dispensers should still be guided by the rule: Solids by weight and liquids by measure.

THE ROYAL SANITARY INSTITUTE.

THE fortieth course of lectures and demonstrations for sanitary officers will be held during September, October, and November at the Parkes Museum, Margaret-street, Regent-street, London, W. The course will be divided into two parts. Part I., beginning on Sept. 19th, will comprise lectures on Elementary Physics and Chemistry in relation to Water, Soil, Air, and Ventilation, and Meteorology; on Public Health Statutes; on the Practical Duties of a Sanitary Inspector, such as Drain Testing, Disinfection, Methods of Inspection, and Reporting; on Municipal Hygiene or the Hygiene of Communities, including Prevention and Abatement of Nuisances, Sanitary Defects in and about Buildings, and their Remedies, Water-supplies, Sanitary Appliances, and Refuse Removal; and on Building Construction in its Sanitary Relations. Inspections and demonstrations will be arranged in connexion with the lectures and will include

visits to disinfecting stations, dairy premises, municipal depôts, artisans' dwellings, offensive trades, waterworks, common lodging-houses, sanitary works in progress, and refuse and sewage disposal works. Part II., beginning on Nov. 20th, will comprise lectures on Meat and Food Inspection, including the taking of Samples of Water, Food, and Drugs for Analysis. Practical demonstrations of meat inspection will also be given. Candidates residing within the County of London who attend, or wish to attend, these lectures may enter the competitions for the evening science exhibitions awarded by the Technical Education Board of the London County Council of the annual value of £5, which may, with the approval of the Board, be applied to paying their expenses in attending these lectures. Application forms and particulars of these exhibitions must be obtained of the secretary of the Board, Victoria Embankment, W.C. The fee for Part I. is £2 12s. 6d.; for Part II., £1 1s.; or for the complete course, £3 3s. Persons desirous of attending the lectures are requested to send in their names to the secretary of the institute at the Parkes Museum. The eighth course of practical training for candidates preparing for the examination for inspectors of meat and other foods, conducted by the Royal Sanitary Institute, will commence on Sept. 29th, at 6.30 P.M. It will consist of systematic practical training in the inspection of meat at a cattle market and will continue for two months. The fee for the two months' course of practical training will be £3 3s. The institute will also hold a special course of practical training in food and meat inspection for commissioned officers and professional men preparing for the examination for inspectors of meat and other foods, conducted by the Royal Sanitary Institute. The course will commence on Nov. 22nd and will consist of practical training in the inspection of foods and meat, including demonstration on live cattle and sheep, slaughtering and dressing of animals, names and situations of the organs, diseases of animals, methods of stalling, arrangement of markets and byres, &c., at a cattle market. A demonstration will also be arranged at a knackers' yard, where instruction regarding the flesh and organs of the horse will be given. The lectures connected with the course will be delivered at the Parkes Museum at 5 or 5.30 P.M. Six will be on meat inspection; two will be on tinned and potted food, milk, butter, and cheese; and four will be on a considerable variety of food substances, such as fish, eggs, tea, coffee, wheat, rice, potatoes, flour, bread, vegetables and fruits, jams, condiments, prepared, concentrated, and preserved foods, and alcoholic beverages. In addition to the special lectures the students may attend lectures in connexion with the course for sanitary officers given in the Parkes Museum at 7 P.M. from Nov. 20th to 30th. The fee will be £4 4s. for the complete course, or for the demonstrations on meat inspection only, £2 2s. Those desirous of attending the course are requested to send in their names at once to the secretary of the institute.

THE PYELONEPHRITIS OF PREGNANCY.

THE pyelonephritis of pregnancy has been generally recognised only within the last decade. For its discovery and description we are indebted almost entirely to French writers and its literature is still almost entirely foreign. As long ago as 1841 Rayer stated in his "Traité sur les Maladies des Reins" that pyelonephritis sometimes occurred during pregnancy in women whose kidneys had previously been affected. To Reblaud belongs the honour of, in 1892, "isolating" the pyelonephritis of pregnancy and giving a description of it which has become classical. In the *Archives Générales de Médecine* of July 11th Dr. Gaussel Ziegelmann has published an exhaustive paper on the subject in which he reports four cases. The pyelonephritis of pregnancy is attributed to compression of the ureters between the enlarged uterus and the pelvis. The urinary tract above the point of compression dilates, as has been shown by numerous necropsies. In fatal cases of puerperal eclampsia German writers have frequently found dilatation of the renal pelves and of the abdominal portion of the ureters. At the same time pregnancy causes increased activity of the kidneys and interferes with the return of blood from them, producing passive congestion. All these causes predispose to infection of the urinary tract. Only the microbe is wanting. It may come from without or within. In the former case an ascending infection of the urinary tract is produced usually by the gonococcus or the streptococcus. The symptoms of pyelonephritis are then preceded by those of urethritis or cystitis. But more usually the microbe is brought to the kidneys by the circulation and a descending infection of the urinary tract occurs. The microbe in this case is generally the colon bacillus, the virulence of which is increased by the constipation which is common of pregnancy. Indeed, the bacillus may produce a general infection with marked symptoms. After a period of septicæmia it may become localised in the kidney and its pelvis—a point of least resistance. Finally, a patient who has suffered from previous disease of the kidneys is predisposed to the pyelonephritis of pregnancy. The pyelonephritis of pregnancy has a predilection for the right kidney. This can be explained by the comparative weakness of this kidney, for it is more frequently displaced than the left and is more often attacked by tuberculosis. Moreover, the greater development of the uterus on the right side during pregnancy and the twisting on its axis bring it into more intimate contact with the right ureter and favour compression of the latter. The left kidney is affected less frequently, later, and less severely than the right. Pyelonephritis generally begins in the later months of pregnancy but one case has been recorded as early as two and a half months after conception and another three and a half months after. Cases have been observed in which pyelonephritis began after labour, especially when this has been difficult. The onset of the pyelonephritis of pregnancy is insidious and may be unnoticed both by the patient and the practitioner. Indeed, the disease may run its course without attracting attention. In some cases the onset is marked by pains in the lumbar region which radiate into the lower abdomen. If the urine is then examined albumin will be found. In other cases the onset is more striking. The patient is seized with a rigor which is accompanied by intense headache and lassitude. There are furred tongue, anorexia, obstinate constipation, and often nausea and vomiting. The temperature rises from 102° to 104° F. and the pulse from 100 to 120. The urine is scanty, dark coloured, and slightly albuminous. Probably a general infection such as typhoid fever or the gastro-intestinal form of influenza is diagnosed. This error is excusable as the general and the gastro-intestinal symptoms predominate and little points to the urinary system, for the lumbar pain is usually not severe. There may be frequent or even painful micturition but this symptom is much less severe than in cystitis. However, after three or four days the symptoms of a general infection diminish, while on the contrary the local ones become more definite. Examination then almost always shows pain, both spontaneous and provoked by pressure in the region of one kidney, usually the right. On vaginal examination a cord may be felt in the lateral fornix—the inflamed ureter. The urine at this stage is scanty, high coloured, slightly clouded, and albuminous. Microscopic examination reveals numerous bacteria and some epithelial cells and casts; there may be a few pus corpuscles. Cultures usually show the colon bacillus. If other microbes such as the streptococcus or staphylococcus

are found the infection is an ascending one. In the next stage the general condition improves and the urine becomes abundant, amounting in the 24 hours to from 1500 grammes to three litres. Its appearance is characteristic: it is uniformly cloudy when passed but on standing becomes clear and deposits a greenish sediment composed of pus and epithelium. Its reaction is acid, which differentiates it from the urine of cystitis. The amount of albumin present is small. The pyelonephritis usually runs a chronic course and recovery does not take place until after labour. Sometimes complications such as cystitis, pyonephrosis, or perirenal abscess occur. Abortion, or more commonly premature labour, may result. The prognosis of the pyelonephrit's of pregnancy is usually good but if the disease is bilateral it is more serious. The prophylaxis consists in supervising the digestive functions of the pregnant woman and in giving aperients when necessary. As to treatment, an absolutely milk diet should be prescribed. Rest in bed during the acute stage and the absence of all fatigue afterwards are necessary. Drugs are of less importance. Aperients and intestinal antiseptics given at the onset will remove the cause of the infection; afterwards the functions of the digestive tract must be supervised. Urinary antiseptics—salol or urotropine in daily doses of one to two grammes—are also given. Weak mineral waters, such as those of Évian, Alet, or Contrexéville, are useful in promoting lavage of the kidneys. In more severe cases surgical treatment may be necessary. Distension of the bladder by the method of Pasteau, though its action is difficult to explain, has given good results in some cases. In serious cases, when the life of the patient is threatened, abortion has been induced, but it does not always cause improvement. On the other hand, when the fœtus has reached the period of viability the production of premature labour gives good results. This procedure is especially indicated when there are signs of toxæmia. If there is pyonephrosis nephrotomy or nephrectomy may be necessary.

ANIMISM AND A MEDICINAL WELL.

UNTIL lately an animistic observance has still been prevalent in the Connemara highlands. In the extremely rude and primitive graveyard of Salruck or Salrock, on the shore of the Small Killary, it has been the custom from time immemorial to leave sustenance for the dead upon the tops of the graves. This sustenance at some unknown period must have consisted of food and drink but later for many years it took the form of tobacco. Later still the tobacco gave place to pipes alone, it being very properly held by the peasants that a spirit can smoke an empty pipe as well as a full one. Until this summer the curious who visited Salruck were shown little deposits of clay pipes upon the unhewn slates covering the graves. As numbers of coffins—local tradition says 60 or 70—have at various times been crushed down in each grave the number of pipes in each deposit was considerable, and quantities were massed together in pails or rusty cooking-pots, which may still be seen standing upon the tombs. The pipes, however, have been recently ordered away by the priests and are now collected in a box outside the sacred precinct, where the faithful still place them after smoking ritualistically on the top of a newly covered in coffin. The custom dies hard and on the top of a grave of a woman said to have died in childbed we found a solitary pipe-bowl. This was outside the rude circular inclosure where the majority of the graves are crowded. The priests' order was evidently not in force here. Salruck has long been famous for its healing well, dedicated to St. Roch, who formed the Salruck ravine by dint of dragging himself free of the chains with which the Devil had loaded him while asleep. Victims of various diseases, including eczema, are in the habit of resorting to the holy well, the waters of which are held to contain sovran curative virtues. This well is now dry but people have still been there this August. They arrive each Saturday night during August and seat themselves on the trailing branch of a tree at the edge of the graveyard proper. The branch is bare of bark and has been polished by the many sitters. Seated on the branch the patients take off their shoes and stockings and watch barefooted during the night. At dawn presumably they make the circuit of the holy well seven times. Cures are said to be frequent, but it must be borne in mind that belief in the wonderful and mysterious is still firmly rooted in the heart of the Connemara peasant. A banshee, for instance, held to be the spirit of some evil-living individual, was heard "roaring every night, begorr," near Welphi lake not 12 years ago. Many heard it. It should be added that a coffin when brought into Salruck "Old Pipe Yard" is carried round it thrice before burial.

"SUMMER ILLS."

CERTAIN maladies are associated with certain seasons of the year. The summer months are, as a rule, more free from serious affections than are the other months of the year, but certain minor diseases are likely then to occur—namely, diarrhœa and tonsillitis, which although mild, as a rule, may occasionally give cause for anxiety. Diarrhœa is probably in most cases due to some error in the food, ptomaines being developed by the rapid decomposition of flesh foods. The eating of unripe fruit is also a cause of diarrhœa with which the public is very familiar, but the occurrence of this is not so frequent as is believed. The cause of "sore-throat" is not so apparent. Some authorities consider that it is due to the presence in the air of micro-organisms carried by dust and very possibly derived from dried horse dung. The roads paved with wood come particularly under suspicion. A bacteriological examination of the dust from wood pavements would certainly prove of interest. If such dust be proved to be infective the manner in which the streets are watered in some districts in London should be taken objection to. Only the sides of the roads receive the attention of the water-carts, the centre being left dry. We presume the object of this arrangement is to prevent the centre of the roads from becoming slippery and so rendering them difficult to horse traffic. The central dust is allowed to remain all day without any attempt being made to "lay" it. When there is any wind or any motor traffic the dust is scattered in all directions and must be inhaled by passers by. Acute lacunar tonsillitis is an infectious disease which is associated with various micro-organisms and some of these may have their origin in, and be disseminated by, the dust from wooden pavements. The fact that the wood has been treated by some antiseptic previously to laying it would have but little, if any, effect upon the dust deposited upon it. We are of opinion that in dry weather the roads should be treated daily with water containing some disinfectant.

THE STERILISATION OF DRINKING-WATER FOR TROOPS IN THE FIELD.

AN interesting demonstration of the various methods employed for the sterilisation of drinking-water was given on August 15th at the Army Service Corps Barracks, Millbank, and amongst those present was Mr. Arnold-Forster, the Secretary of State for War. The methods of purification illustrated were divided into three sections: (1) those in which the water is sterilised by heat; (2) those in which purification is effected by filtration; and (3) those in which the addition of chemical agents is relied upon to sterilise the water. Of the six apparatus illustrating the sterilisation of water by heat the principle of the

working of five of them was that of heat exchange, that is, the in-going cold water is warmed by the out-going hot water. Such apparatus are the Lawrence steriliser, the Forbes steriliser, the Mallock steriliser, the Tuckfield and Garland steriliser, and the Griffiths steriliser. In the testing of these appliances observations were made as to the weight of the apparatus, as to the fuel required, and as to the temperature of the in-going water and the water after treatment. It was assumed that when a certain temperature was reached the destruction of pathogenic organisms was ensured. The Leigh-Canney apparatus is a boiler delivering from 28 to 36 gallons per hour of water sterilised by heat. Kerosene oil in all these apparatus is employed for fuel. The scheme under which Dr. H. E. Leigh Canney would have armies in the field use his apparatus has been fully given in THE LANCET[1] on the occasion of an address delivered by the inventor at the United Service Institution. The scheme was well received, and Dr. Leigh Canney claims that it is identical with that employed by the Japanese army in their successful attempt to eliminate typhoid fever from their ranks. Coming now to the application of filtration to the purification of water the Field Service Filter of Slack and Brownlow was shown; the exhibit was of particular interest as illustrating the improvements which have been made from time to time in the construction of the field service filter. Thus the first filter for field service consisted simply of a single candle filter with semi-rotary pump and air vessel. This was followed by the addition of a clarifying apparatus, using for the purpose a bag and kieselguhr powder, the introduction of which increased very materially the rate of filtration. Then came a two-candle filter, with clarifying bags applied directly to the candles which were arranged vertically. Afterwards the candles were placed horizontally and their number added to, in spite of which the entire weight of the apparatus was reduced to 124 pounds and was capable of delivering from 100 to 120 gallons per hour when filtering clear water. The rate, however, is diminished when muddy water is being purified. A service water-cart was also shown fitted with Slack and Brownlow filters, the average yield of which is 100 gallons per hour. The Baily Denton service water-cart is fitted with clarifying and sterilising filters. The time taken to fill the unfiltered water tank (25 gallons) was 15 minutes and the conveyance of this to the clarified water tank occupied ten minutes and, finally, it reached the sterilised water tank in 60 minutes. In regard to sterilisation by the addition of chemical reagents the Schumberg's process of using free bromine was tested; the time required for sterilisation of one litre of water, using 0·06 of free bromine, was from 7 to 30 minutes. After this time the bromine is neutralised by adding a mixture of sodium sulphite and sodium carbonate. In about two minutes, it is stated, the odour of the bromine disappears but the water has a slightly stale taste. Using iodine in the same way the water, it is said, after treatment has no smell and it is not altered in appearance, while it is difficult to distinguish any difference in taste between natural water and water thus treated, and, moreover, it has no ill effects on the digestive tract or the health generally. Chlorinated lime associated with bicarbonate of soda was also used in the form of tablets, sodium sulphite being subsequently employed to render the water free from chlorine and objectionable taste. The time required for sterilisation by chlorine is the same as that when iodine is used and the quantity of iodine or chlorine added is very small. Bisulphate of soda was also tried but it is reported that in the war in South Africa men objected to the acid taste of this salt, and it was also found that water so treated attacked the iron of the water bottle. Lastly, the addition of two or four centigrammes per litre of permanganate of potassium destroys, it is said, all pathogenic bacteria. The method is largely used in India, a solution of the permanganate being added to the water until a distinctly permanent colour remains.

[1] THE LANCET, Nov. 16th, 1901, p. 1360.

RUSSIAN METHODS OF QUARANTINE.

IN a report on the affairs of Odessa Mr. Consul-General C. S. Smith gives interesting details as to quarantine disinfection. He writes, *inter alia*: "Until the spring of 1904 vessels arriving at Odessa from ports infected with plague or cholera were subjected to great inconvenience. Before receiving pratique they were required to proceed to Theodosia, about 260 miles away, where ship, cargo, and persons had to undergo disinfective processes which (for persons) were often of a very rough-and-ready nature. From the middle of May, 1904, a different system has been followed which avoids the obvious inconveniences of the former plan and, I am glad to add, has caused no complaint as to the manner of its application. All quarantine requirements are now fulfilled by means of a quarantine barge, which is a large lighter adapted for purposes of bathing passengers and crews and disinfection of bed-linen, clothes, &c. The following is the *modus operandi*. On a ship's arrival the quarantine barge is brought alongside. From the ship's decks all bedding, linen, clothing, and other effects are immediately transferred to the deck of the quarantine barge and thence taken in special small trolleys into a disinfecting room, in shape like a metal room, which is hermetically closed and filled with high-pressure steam, so that in 15 minutes all bacilli and microbes are killed. For the disinfection of furs and leather articles, which might be damaged by the hot steam, the disinfection chamber is also adapted for the use of formaline vapour. The articles to be disinfected are put in the disinfection chamber through another hole on the opposite side, after which they are returned to the steamer. The passengers and sailors have to bathe and have their clothes disinfected before they are allowed to leave the barge, which is fitted with all necessary conveniences. While the ablution of the passengers and the disinfection of their effects are proceeding a specially trained staff, consisting of disinfectors and sanitary men drawn from the ranks of the quarantine guard, proceed on board the steamer and effect there a careful disinfection of all interior compartments and holds, and at the same time destroy the rats by burning sulphur in the hermetically closed holds. By this manner 1774 rats were killed on board vessels coming to Odessa from infected places between May 5–18, 1904, and Jan. 1–14, 1905. On board of two Russian and four British steamers there were found several rats which on investigation showed clear evidence of being infected with plague."

THE PHYSIOLOGY OF HICCOUGH.

THE physiology of hiccough is interesting and should be remembered because the presence or absence of this symptom sometimes forms a valuable indication in the treatment of dyspeptic subjects. The mechanism which produces hiccough or *singultus* is the same as that producing the "cry" which often accompanies an epileptic fit, the so-called "bark" of sufferers from hydrophobia and tetanus, and the occasionally recorded noises proceeding from "the silent dead" when rigor mortis is setting in. The mechanism is akin likewise to that of sighing and yawning, which modifications of respiration, however, are under the control of the will.[1] The noise emitted is due to a rapid clonic spasm of the diaphragm, causing a premature inspiratory act, while the walls of the glottis are not sufficiently abducted to allow the air to enter the trachea quietly. If the diaphragm contracts very energetically the result is retching and

[1] THE LANCET, Jan. 21st, 1905, p. 174.

vomiting. The inability to maintain voluntarily the regular respiratory rhythm is a well-known condition precedent to actual sea-sickness and in fact the etiology of hiccough is sufficient to explain the physiological action of emetics, physical or pharmacological. The proximate cause of hiccough is the sudden contraction of the diaphragm by direction of the phrenic nerves. These lengthy nerves may be stimulated directly, centrally, during their cervical or thoracic course or at their terminal filaments; they may be the final carriers of reflex messages, particularly from the ubiquitous vagus nerve; occasionally hiccough occurs as a functional neurosis, although some organic cause, patent or latent, as a general rule can be found. The most commonly occurring stimuli proceed from below the diaphragm, either from some local irritation of the peritoneum, as in perityphlitis, or from an irritated stomach or intestine; thus the too liberal use of alcohol or of red pepper in "devilled" foods, or the existence of flatus, may all stimulate the afferent fibres of the vagus and perhaps consummate in emesis. Local irritation of the pharynx or the mechanical pressure of an aneurysm or a neoplasm upon the afferent phrenic nerves may lead to distressingly chronic attacks of hiccough. With paresis of the phrenic nerves this manifestation is absent. Of the many therapeutic agencies recommended sneezing is one of the most efficient; it is also one of the most ancient, for Plato tells us that it succeeded with Aristophanes when all other means failed to arrest an attack of hiccough.

THE RESULTS OF NOTORIETY.

AN incident recorded recently in the daily press provides an instructive object lesson. Dr. Urbino de Freitas, a Portuguese medical man, has just been released from a convict prison, his life sentence having been reduced through the clemency of the King of Portugal to 15 years' exile from his native country. Upon leaving the convict station at Loanda Dr. Freitas landed at St. Vincent (Cape Verd), at which place he was greeted enthusiastically by large numbers of the population, while hundreds of persons suffering from diseases of various kinds flocked to his hotel to be treated by him. The convict physician seems to have taken full advantage of his comical reputation and of the credulity of the populace and undertook the treatment of, and professed to be able to cure, incurable complaints. So great was the belief in his healing powers that miraculous cures of leprosy were ascribed to him and his departure from St. Vincent was made the occasion of a popular demonstration. Hero worship is a generous failing, although carried frequently to absurd lengths, but the spurious interest excited by individuals who have gained notoriety in one direction, and who suddenly launch forth into other fields of endeavour, is not easy fully to comprehend. Dr. Freitas had not a chance of practising his profession for fifteen years, being in durance, but being notorious as a criminal he is at once accepted as a singularly able medical man. A person only needs to be famous or infamous and whatever he or she undertakes is eagerly seized upon by the crowd. A chorus girl of unlucky reputation, acquitted of a murder charge, can command large sums as a singer of innocent ditties, and undoubtedly if she were to write a book on astronomy it would be widely read. When a celebrated politician strays from his beaten path and writes a novel his efforts are greeted with an applause often out of proportion to the talent displayed. This is not to say that everyone should stick to his last, or to suggest that a man, because he is a physician or a statesman, should not be able to show abilities of a high order in other and widely different directions. Prominent examples to the contrary would show the fallacy of such reasoning. The point is, that the glamour thrown by reputation or notoriety over the individual acts as an advertisement of an extraordinary nature, so that when he branches out into a different line of thought or action he attracts disproportionate popular attention. Notoriety exercises a remarkable influence over the minds of a vast number of people, an influence which is especially manifested and most highly developed in the ignorant classes. There has always been an unconquerable fascination for the many in following the careers of great criminals and at the present day the love of sensationalism is particularly vivid. Modern press methods have been great factors in fostering it and in crowning celebrated criminals with something of a halo. Hence the fame of Dr. Freitas.

THE ACTIVE CONSTITUENT OF FOOL'S PARSLEY.

Æthusa cynapium, Linn., or fool's parsley, has long been credited with the possession of poisonous properties, though some observers have taken an opposite view. In order to settle this question Dr. Frederick B. Power and Mr. Frank Tutin have made a chemical examination of the plant and have contributed the results to the International Congress of Chemistry and Pharmacy at Liége.[1] The plants were collected in the environs of London, the parts chosen for examination including the fully-developed unripe fruits and the entire plants. A volatile oil was found corresponding to 0·015 per cent. of the weight of the entire fresh plant. In addition an alkaloid was isolated having the peculiar characteristic odour of coniine and resembling it in many chemical and physical characters. The quantity obtained was too small to verify absolutely its chemical identity with coniine, representing, in the form of the hydrochloride of the alkaloid, 0·0003 per cent. of the entire fresh plant. It is, however, not only from a chemical point of view, but also from that of the toxicologist, that the verification of the presence of a volatile alkaloid in this plant merits consideration, particularly on account of the conflicting opinions which have so long been held respecting its reputed poisonous properties.[2] The conclusion that the alkaloid contained in fool's parsley is probably coniine or a mixture of bases containing coniine, as is met with in hemlock, is supported by a physiological test performed by Dr. Power and Mr. Tutin. A quantity of the volatile alkaloid, representing 500 grammes of the air-dried drug, when administered to a dog, produced symptoms characteristic of poisoning by coniine. The absence of other toxic constituents from the plant and the small quantity of the volatile alkaloid present afford some justification for the conclusion of Dr. Harley that the plant is free from toxic properties. It is quite possible, however, that this conclusion, based upon physiological experiments with the expressed juice of the plant, may only be correct within certain limitations. It has been observed, for example, in the case of hemlock, that the plant varies in narcotic power according to the weather and climate, being most active in hot and dry seasons and in warm countries.[3] The present investigation has positively confirmed the observations of earlier investigators by the discovery of a volatile alkaloid resembling coniine in its chemical, physical, and physiological characters. In view of this result it may be considered probable that, under favourable conditions of growth, the plant may yield a larger proportion of toxic alkaloid sufficient to impart the poisonous properties ascribed to it. It is desirable that this probability may be definitely substantiated or refuted in the near future, so that this vexed question may be finally placed beyond dispute.

[1] Chemist and Druggist, August 5th, 1905, p. 268.
[2] Compare a communication by Dr. John Harley, Pharmaceutical Journal, 1880, vol. ii., p. 437; THE LANCET, July 7th, 1888, p. 16; Brit. Med. Jour., July 16th, 1904, p. 124.
[3] United States Dispensatory, eighteenth edition, p. 447; American Medicinal Plants, by Millspaugh, vol. i., No. 65.

THE CONDITION OF THE BLOOD-VESSELS DURING SHOCK.

IN another column we publish an interesting lecture which was delivered before post-graduates at the Samaritan Free Hospital by Mr. J. D. Malcolm. He rightly considers that one of the chief objects of scientific investigation is to ascertain the extent to which theories agree with facts. Mr. Malcolm holds views on the condition of the vessels during shock which are not those which are usually taught but which he considers fit in exactly with clinical and experimental facts. In his lecture he expounds his ideas in a very lucid fashion and criticises boldly the opinions held by other authorities on the subject. In the first place he says that it is necessary to get rid of the idea that a fall of blood pressure, wherever it is found, indicates absolutely that the vessels are dilated. He strongly maintains that the contraction of an artery increases the resistance to the blood within it, but diminishes the blood pressure within it. He then proceeds to describe a scheme of the course of changes in the blood-vessels as he believes they occur during shock. Briefly stated, his arguments are as follows:—An injury to a nerve causes a contraction of the arterioles throughout the body; if the irritation is sufficiently severe and persistent the contraction tends to increase and to extend to larger vessels as long as the irritation is in action or as long as the operation continues; the radial arteries may become so small that pulsation cannot be felt. At first the pressure in the carotids is also raised, but after a time the blood is forced into the central warmer parts of the body, the vessels in which probably relax on account of the physiological necessity for a conservation of heat. The veins of the internal parts are possibly enlarged rather more than the arteries, but there is no loss of tone in any portion of the vascular system, the evidence being (according to Mr. Malcolm) that the arterioles are contracted throughout the body. In speaking of treatment Mr. Malcolm remarks that when the cause of shock ceases the tendency inherent in the tissues is to recovery. All the afferent nerves of the vaso-motor system except those stimulated in the injured area—that is to say, the nerves from the whole of the rest of the body—send messages indicating the necessity for a relaxation of the vessels, and these messages begin to take effect as soon as the local irritation ceases or becomes more moderate in action. The treatment of the condition must therefore be directed to preventing the ill effects of a local irritation, to relaxing the vessels as soon as possible, and to keeping up the blood pressure in the superficial vessels until such time as a physiological relaxation takes place. Mr. Malcolm's practical remarks on carrying out these principles will probably receive acceptance in many quarters, but doubtless exception will be taken by some authorities to his theoretical considerations.

THE ANNUAL REPORT OF THE NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO CHILDREN.

LAST May witnessed the coming of age of the National Society for the Prevention of Cruelty to Children. A report since issued, the sixteenth detailed statement of its kind, is of more than usual interest on account of the comparative survey which it affords of the work and the progress of the society since the issue of its earliest annual record. From it we learn that the number of cases of cruelty of the violent type has decreased during the past 16 years from 28·1 to 9·4 per cent; the number of cases taken into court has fallen from 12·6 to 6·3 per cent.; while the milder process of warning parents against the continuance of harsh treatment, a method always preferred by the society, has been found to be effectual in the proportion of 80·4, as compared with 54·1 per cent. in 1891. One reason suggested in explaining this last circumstance is the loyal consideration and support which have been rendered to the society in courts of law. It is satisfactory to find that offences of an immoral character have likewise been reduced from 5·1 to 1·9 per 100. Another noteworthy feature is the closure of shelters which at one time were necessary for the accommodation of children consigned by the authorities to the society's care. The total number of these *protegés* last year was 542, but in the great majority of cases it is now possible, thanks to the judicious supervision of inspectors, to restore the children of delinquent parents to their homes with a prospect of their better treatment. The report deals with certain related subjects of present interest. In connexion with the alleged physical degeneration of the race it records the result of examination by weight and measure of 6500 children in public elementary schools throughout London and finds no evidence to support this allegation. Neither does it speak with approval of a recent venture of philanthropy—the proposal that underfed school children should be provided for out of the public purse. After pointing out that this arrangement would not satisfy the requirements of the many neglected children under school age, it adds: "Responsibility for feeding rests in parents and neither in school authorities nor in ratepayers and it must be enforced upon parents from the time of their children's birth." With this expression of opinion probably most persons will agree. The finances of the society are, on the whole, in a more satisfactory condition than for some years past. The whole income from all sources for last year amounted to £75,193, the highest figure as yet reached in any year. The increase in annual subscriptions, including those collected by children, was £1826. Expenses, which reached a total of £66,332, showed a decrease of £1587 on the preceding year and the average cost per child has fallen from 13*s.* to 12*s.* 6*d.* Part of the debt of the society, amounting to £12,320, has been paid off. Nevertheless, the financial statement for the whole year shows a deficit of £4202, which represents approximately the cost incurred in the support of children placed in the society's custody. From these facts it is evident that this society is carrying on an excellent work and is doing it with care and judgment; that it is the friend of the parent as much as of the child, and is increasingly accepted as such; that it is gaining ground, paying its way, and reducing expenses, and that such arrears as are outstanding are of a kind that is practically inseparable from the conditions of its operations. On all these grounds we feel confident that the support which has been accorded to it in the past will not fail it in the future.

CARDIAC MASSAGE IN CIRCULATORY FAILURE DURING ANÆSTHESIA.

THE interesting observations recorded in our pages last week by Mr. H. M. W. Gray of Aberdeen form a valuable and noteworthy contribution to a difficult subject. While the treatment of respiratory failure is well established and comparatively easy to carry out, unfortunately when sudden cardiac syncope or respiratory failure occurs during the course of anæsthesia the outlook is much more serious, for the time during which any interference is likely to be of use is exceedingly short. There is, moreover, at the present time no definitely approved routine treatment that can be adopted. The ordinary methods of applying hot applications or electrical stimuli to the cardiac area, with the administration of drugs like strychnine and digitalis hypodermically, too often prove unavailing, while attempts at direct compression of the heart from below the thoracic margin are difficult to carry out effectively and are apt to interfere with the simultaneous performance of artificial

respiration. The method adopted by Mr. Gray was to open the abdomen in the middle line immediately under the xiphoid cartilage and inserting two fingers the heart was rhythmically massaged through the diaphragm at a rate of from 70 to 90 compressions per minute. In one case of which he gives a detailed record after about four minutes the heart became firm and then began to beat slowly (about 30 or 40 to the minute). The massage was continued for a few seconds, the natural pulsations became stronger and more frequent, the appearance of the patient changed from that of apparent death with pallid face, glassy eyes, and dilated pupils to a more natural aspect with returning colour, the eyes became brighter with contracting pupils. During all this time artificial respiration had been systematically carried out, but as the heart became stronger in its beats normal respiration was re-established. The patient lived just under two hours, although consciousness was never regained. Mr. Gray refers to another case in which his treatment, to which he has given the name of subdiaphragmatic transperitoneal massage of the heart, was entirely successful, only two or three compressions being necessary to start the heart beating. The eventual failure in his other case, it seems to us, is no discredit to his method, since the conditions were desperate in the extreme. The patient, an elderly woman, with a large cancerous growth in her larynx, arrived at the hospital with intense cyanosis and dyspnœa, almost *in articulo mortis*, after a journey of about 30 miles, so that a preliminary tracheotomy was also needed. Mr. Gray estimates that at least ten minutes elapsed from the time of the cessation of the heart beats to their resumption after massage. Indeed, the partial success in this case seems to warrant the adoption of the method in similar cases of anæsthetic or asphyxial syncope. The condition is a desperate one and heroic measures in such a case are justified as being the only ones likely to be of avail.

OPERATIVE ANASTOMOSIS OF BLOOD-VESSELS.

THE success which has now for many years attended the practice of intestinal anastomosis must have suggested to many the question whether it might not also be possible to unite the two parts of a severed blood-vessel. In the case of the bowel there is the great danger of extravasation of the contents if the union is not complete. In the case of a blood-vessel we have two dangers; firstly, the risk of hæmorrhage if the anastomosis is not tight and, secondly, the risk of thrombosis from the blood clotting at the site of injury. There is yet another danger that later the vessel wall might stretch, producing an aneurysmal pouch. None of these difficulties is, however, quite insuperable. Attempts have been made from time to time to unite blood-vessels which have been completely severed and these attempts have in part succeeded. The latest work on these lines has been done by Alexis Carrel of the University of Chicago who showed that, when a portion of the carotid or femoral artery of a dog was removed and the continuity of the vessel restored by interposing a segment of a vein—the internal jugular or the femoral,—after the completion of the anastomosis the peripheral circulation was fully restored. The venous segment proved capable of standing the arterial pressure. In the operative anastomosis of blood-vessels lie great possibilities of advance in surgery. If it be found practically possible to unite arteries plastic surgery will have far wider bounds than at present.

CHILDREN'S COUNTRY HOLIDAYS FUND.

Canon Barnett, who has had an extended acquaintance with Whitechapel and the slums of the East-end, makes this week a special appeal through the press to the public to remember at this holiday season of the year the poor children who will have to spend their "holidays" in narrow homes unless some benevolent readers, remembering the holiday delights of their own or of their friends' children, will consent to deduct a small amount from their holiday funds for the purpose of securing to some of these poor children a real holiday. "Ten shillings," says Canon Barnett, "a sum easily taken from your readers' holiday money, is sufficient to secure a London child a fortnight's happy life." A large sum has been contributed but £2500 are still wanted if the fund is to be placed in a secure position to give the necessary help. Donations, large or small, should be sent to the Earl of Arran, the treasurer, 18, Buckingham-street, London, W.C.

ALCOHOL IN SWEETS.

SWEETS in which liquids are imprisoned have been a puzzle to many people; they have wondered why the sugar did not dissolve. The answer, of course, is that the liquid, whatever it may be, is first of all saturated with sugar so that it is incapable of taking up more sugar. A simple solution of sugar in water for this purpose does not answer, for a saturated solution of sugar is apt to crystallise, while if it is not saturated it will dissolve the sugar coating when placed in it. A most convenient vehicle for the purpose is alcohol, in which sugar is far less soluble than in water. Until quite recently sweets containing a liquid prepared on these lines were fairly extensively manufactured. But the sale of alcohol of a strength exceeding 2 per cent. is of course illegal unless a licence is held by the seller, who otherwise incurs liability to prosecution under the Excise laws, and the penalties are severe. On these facts being represented to the proper quarters the sale of alcohol in this surreptitious way was practically stopped and we believe that sweets with liquid contents are now made which are free from alcohol. Evidently another vehicle has been chosen which serves the same purpose. Some recrudescence, however, of the sale of alcoholic sweets is reported to have taken place recently in the form of "liqueur chocolates." The chocolates were found to contain spirit in a free form varying in strength from 8·7 to 11·0 degrees. We presume this means degrees of proof spirit and if so the actual alcohol present would amount to about 5 per cent. by volume. But it is obvious from this calculation that it would be quite possible to obtain a toxic dose of alcohol by taking a sufficient quantity of the sweets. The practice, however, is likely to be quickly suppressed by the Excise authorities who, in jealously guarding the interests of the Revenue, check at the same time the spread of what might easily be a demoralising traffic.

FLIES AS AGENTS IN THE SPREAD OF DISEASE.

IN reference to our recent article on Earth Temperatures and Diarrhœal Diseases[1] we have received an interesting letter from Dr. J. T. C. Nash, medical officer of health of Southend-on-Sea. In two previous communications published in THE LANCET of Sept. 24th, p. 892, and Oct. 8th, p. 1043, 1904, respectively, he brought forward a considerable amount of evidence suggesting that flies play a very important part in carrying the infective agent of epidemic diarrhœa. It may be remembered that Dr. Ballard in his original report upon this disease commented on the fact that the summer rise of diarrhœal mortality did not commence till the mean temperature of the earth at a depth of four feet below the surface reached 56° F. He therefore concluded that it would be found that the growth of the infective agent was favoured by that condition and that it

[1] THE LANCET, August 12th, 1905, p. 470.

was by some means conveyed to articles of food, especially milk. Dr. Nash's suggestion would certainly explain the transference very successfully, and it must be admitted that he has brought forward some very striking evidence in support of his views. In a paper read before the Epidemiological Society of London[2] he pointed out that in Southend during July and August, 1901, there were 23 deaths from diarrhœa among infants under the age of one year, whereas during the same period of 1902 there were no deaths from that disease, although the temperature four feet below the surface of the earth exceeded 56° F. throughout the whole period. During those two months there was an almost complete absence of flies, but during September, when flies became abundant, there were 13 deaths of infants from diarrhœa. Again, in a special report presented to the borough of Southend on epidemic diarrhœa, Dr. Nash gives an interesting map showing the portion of the houses in which deaths from this disease occurred during August, 1904, and their relation to some brickfields where a great deal of house refuse was deposited, forming a breeding-ground for flies which infest the streets within the radius of one-third of a mile around. The cases were found to be closely aggregated in houses round these brickfields and especially in the directions of the prevailing winds during that period. Dr. Nash strongly recommended the adoption of measures to prevent the breeding of flies, notably the abolition of the brickfields and the provision of a refuse destructor for the disposal of house refuse. He informs us in his letter "that during the present year the Corporation of Southend have removed all house refuse out of the borough entirely, and that in spite of a warm July, with a rainfall of only 0·25 inch in the month, flies have been scanty and only one death from diarrhœa has been recorded during the fortnight ending August 5th as compared with 14 deaths from this disease during the corresponding period in 1904 when flies were abundant." These figures taken in conjunction with the other evidence he has previously brought forward certainly lend support to the view that flies play an important rôle in the spread of this disease. A similar suggestion in regard to typhoid fever has also been made and seems also to be likely, though flies are probably of less importance in this country than other channels of infection. That flying insects can harbour or carry pathogenic organisms has been actually proved by bacteriological examination, notably by Mr. A. G. R. Foulerton, who has demonstrated that flies may harbour the bacillus coli, bacillus enteritidis, and proteus vulgaris. The latter organism has also been found in flies caught over filth trenches in India by Lieutenant-Colonel A. M. Davis. The success which has apparently attended Dr. Nash's work in his own district should lead to the adoption of his methods in others.

THE WORKING OF THE INEBRIATES ACTS.

THE report for 1904 of the inspector under the Inebriates Acts, which has been recently issued by the Home Office, supplies, in addition to much useful information for those concerned in the study of national sobriety, a fair amount of satisfactory evidence as to the value of the Inebriates Acts. The report deals comparatively shortly with existing certified inebriate reformatories, paying particular attention to changes which have actually occurred in those institutions. It is worthy of note here that there are now 11 certified inebriate reformatories in full work, as against nine in 1903, with a complement of beds totalling 1073. The two latest additions to the number of reformatories are those of Lancashire at Whalley and of the eastern counties at East Harling, Norfolk. At the present time there is also in course of progress a building at Cattal, near York, for the Yorkshire Inebriate Reformatory. The difficulties that arise in the course of efforts to improve the national care of inebriates are well brought out in the body of the report. One such difficulty arises from the fact that no inebriate can be committed to a reformatory without the voluntary co-operation of local authorities and local justices. A justice is powerless to commit for detention unless the local authorities agree to provide accommodation. This they are not always willing to do to the extent that is desirable for efficient working of the Acts. Moreover, by a Treasury regulation the Government grant towards the maintenance of inmates of reformatories cannot be allowed unless a local authority also contributes a certain proportion of the expense of detention in regard to each committed case. When, therefore, a county or a borough chooses to refuse such payment no case can be committed by the justices from any police-court within the jurisdiction of the unwilling borough or county. A considerable number of local authorities have up to the present in this way rendered the Inebriates Act futile within their area of jurisdiction. The report gives a concise summary of judicial action as provided for by the Inebriates Acts and also discusses the important question of length of term of detention. One year's sentence, it is pointed out, means expense of maintenance with no probability of adequate return in improvement of the inebriate. A three years' term gives the best chance of permanent benefit in the largest number of certified inebriates. The inspector remarks that it is a matter for regret that many persons are not sent to reformatories until long after the reformable stage of their weakness has been passed. Reformable, even more than irreformable, inmates for the reformatories are the desideratum. The report is full and freely illustrated with diagrams and charts and is an eloquent testimony to the thorough and efficient work of its author, Dr. R. Welsh Branthwaite.

THE EXAMINATION OF SPUTUM FOR TUBERCLE BACILLI.

IN another column we publish an article by Mr. C. G. Higginson on the Technique of the Examination of Sputum for Tubercle Bacilli Fully Described. Mr Higginson regrets that in none of the many text-books that he has consulted are sufficiently minute details given of the various processes through which the sample of sputum has to pass in order that the search for tubercle bacilli may be satisfactory. Mr. Higginson is on the whole correct in his judgment, but in justice to a few authors we must say that in some manuals devoted to the use of the microscope in medicine excellent descriptions are given of the very method which he so lucidly details. There is nothing new in the main principles adopted by Mr. Higginson; his technique is practically the same that has been employed for 20 years with the exception of some trifling details. But his article is of value on account of the detailed manner in which the method of search for the bacilli is described and because of the useful hints which are given in reference to the use of the microscope. He recommends, by the way, that the sputum should be spread directly on a glass slide, instead of being pressed between cover glasses. We prefer the latter method as yielding a thinner film, while two specimens are thus prepared at once, so that if an accident should happen to one the other can still be employed. We perfectly agree with him in his disapproval of the practice of trying to decolourise and to counterstain simultaneously by the use of a mixture of sulphuric acid and methylene blue. These two stages are carried out with more certainty when the acid solution and the counterstain are employed in succession. The bacilli are more easily seen when a blue counterstain is used. The plan

[2] Transactions of the Epidemiological Society of London, new series, vol. xxii., 1902-03.

be adopts in washing and preserving the specimens may be followed with confidence, and his notes show after a little experience any practitioner ought to be able to carry out his examinations of sputum for tubercle bacilli without difficulty.

PUBLIC LAVATORIES.

THE ill results which follow from habitual over-distension of the bladder in the female are well known to gynæcologists. Such over-distension plays an important part in the production of a cystocele and also contributes to the development of the condition of partial atony of the bladder which so many women suffer from when past middle life. The habit so prevalent amongst many women of only passing urine twice during the 24 hours, at night and in the morning, is a very baneful one. Not only does it lead to an undue strain being placed upon the capacity of the bladder but it also entails the custom of drinking very little fluid in order that the desire to micturate may not become too pressing. This in its turn is responsible in a large measure for the sluggish action of the liver and intestines which is so common in women of all classes. The habit has probably developed as a direct result of the false modesty which is so marked a feature of English education in regard to such matters. There is, however, another important factor which no doubt plays a part, and this is the inadequate accommodation which exists for this purpose in most public places. It is true that of late years much has been done in this direction, at any rate in London, but much yet remains to be done. The lavatory accommodation provided for women by many of the large railway companies is still most inadequate. Corridor trains are the exception and not the rule and in many of the railway stations a charge is made for such accommodation. And not only is this so in many of the railway stations but also in most of the public places of this kind provided by borough councils and other public bodies. In all lavatories and railway stations free accommodation is provided for men, at any rate so far as the act of micturition is concerned, but in practically every instance for corresponding accommodation for the other sex a charge of 1*d.* is made. This is an anomalous state of things which should not be allowed to exist, more especially when we recollect how much more harmful over-distension of the bladder is in the female than in the male. Public bodies have no right to make money out of the infirmities of the flesh and the fact that such a charge is made, even though it be so trivial a sum as 1*d.*, must undoubtedly often lead to a great deal of suffering and distress amongst women of the poorer classes.

THE medical officer of health for the Cape Colony reports that for the week ending July 29th no case of plague in human beings was discovered. Plague-infected rodents were found at Port Elizabeth, King William's Town, and East London. At each of the two former one plague-infected cat was also found. The Commissioner of Public Health for Queensland, Australia, for the week ending July 8th reports that no case of plague had occurred in Brisbane since June 14th. One case of mild form was reported from Cairns and one case which ended fatally occurred at Ipswich on the 5th. No plague-infected rodents were found either at Cairns or at Ipswich.

DIFFICULTY IN FINDING DIRECTORS FOR RUSSIAN CLINICS.—In the Military Medical Academy, St. Petersburg, there is being experienced a scarcity of medical men to undertake the duties in connexion with certain special clinics. To fill the gaps the council of the Academy has proposed that *privat docentes* should be invited to take up the work and they have been invited accordingly.

THE MEDICAL ASPECTS OF NATIONAL LAND SETTLEMENTS.[1]

IN January, 1905, the Colonial Secretary, at the instance of the Rhodes Trustees, appointed Mr. Rider Haggard (equally well known as a novelist and an authority on the economic and social conditions of rural England) as a Commissioner of the British Government to inspect and to report upon the conditions and character of the agricultural and industrial settlements which have been established in the United States by the Salvation Army. These settlements have had as their intention the transmigration of suitable persons from the great cities in the United States to the land, and the formation of agricultural communities. The object of the Colonial Office in asking Mr. Haggard to make this inquiry was to ascertain whether, if the American experiments were proved to be successful, some analogous system could be applied with advantage to this country in the transference of the surplus of our urban populations to different parts of our empire. Mr. Haggard was consequently invited to pay special attention to the class of persons taken by the Salvation Army to form these settlements and was instructed, when he came to his conclusions with respect to the training and success of the settlers and the general effect upon their character and happiness of the social upheaval to which they had been submitted, to discuss the whole matter with Earl Grey, the Governor-General of Canada. The Rhodes Trustees had evidently Canada in their minds as a country offering the maximum of opportunity to agricultural settlements from the mother country, if the necessary machinery were forthcoming, and if the settlements, already existing in the United States, proved after investigation worthy of imitation; while Canada might well be expected to welcome additions to her too scanty population if she were assured that the immigrants were enrolling themselves as colonists in circumstances likely to recommend them as creditable and useful citizens. Mr. Haggard in accepting the commission offered him by Mr. Lyttelton proposed that, in the event of his investigations leading him to believe that the agricultural settlements have been successful and that their principle is capable of wide application, he should include in his report practical suggestions as to the means whereby the American example might best be turned to use by this country, a proposal which received the concurrence of the Colonial Office. Accordingly Mr. Haggard, taking his daughter as secretary, started in February of this year for the United States and, having discharged his commission exactly according to the programme outlined above, made a report in May. This report, which was presented to Parliament in June, is a highly valuable document which seems to us to have been received in a singularly apathetic manner in quarters where it should have commanded earnest attention. To medical men Mr. Haggard's experiences and conclusions must be particularly interesting because the problems connected with the housing of the poor, with the overcrowding of cities, and with the alleged deterioration of national physique are now recognised as factors of the first importance in the maintenance and spread of disease.

Mr. Haggard's report includes accounts of his visits to the three Salvation Army land colonies in the United States, situated respectively at Fort Romie, California; Fort Amity, Colorado; and Fort Herrick, Ohio; of investigations into a plan of Vacant Lot Cultivation at Philadelphia and of a State system of land settlement at Yuma, Arizona; and of an inspection of the methods of land tenure which have brought material prosperity to Salt Lake city. He had interviews with President Roosevelt and with Mr. James Wilson, the State Secretary of Agriculture, while in the United States, and then, primed with varied information, proceeded to Canada, where he was able to discuss the whole situation with Earl Grey, the Governor General of the Dominion, Sir Wilfrid Laurier, the Canadian Prime Minister, Dr. Bryce, the Medical Officer of Immigration, and, indeed, all the important Government officials whose coöperation would be

[1] Report on the Salvation Army's Colonies in the United States and at Hadleigh, England, with Scheme of National Land Settlement. By Commissioner H. Rider Haggard. London: Wyman and Sons. 1905. Pp. 71. Price 8½*d.* The Poor and the Land. By H. Rider Haggard. London: Longmans, Green, and Co. 1905. Pp. 157. Price 1*s.* 6*d.*

required to carry out a comprehensive scheme of transmigration.

Mr. Haggard's visits to the three land colonies of the Salvation Army were all conducted on the same plan, and a thoroughly business-like plan too. He inspected the colony, asked a series of pertinent questions from the responsible officials, and then interviewed the settlers themselves. In this way he arrived at a very practical understanding of the work that had been done, of the way of its doing, and of its results. The answers of the officers of the Salvation Army revealed the terms of purchase on which the land had been acquired, the acreage of the land and its condition in respect to soil and irrigation, the quality of the settlers, and the terms of settlement as between the Salvation Army and the settlers. Fort Herrick was found to be an industrial colony, like that of Hadleigh in Essex, but Fort Romie and Fort Amity are agricultural settlements affording examples of great interest and utility. In many points the histories and organisations were similar, although the colonists of the former were drawn more from the agricultural classes while those of the latter were almost entirely of urban type. Fort Romie has a gross area of 520 acres of primeval fertility. The original settlement, founded in 1898, was a failure, mainly owing to the experiment having been made upon unirrigated land, and of the 18 San Francisco families then established but one remains. In 1900, however, proper irrigation of the land having been arranged for, a new start was made and has resulted in a most prosperous colony. 20 families, the eldest male of which had usually some agricultural experience, are now prospering on the land in varying degrees, although the head of the family was at the start often practically destitute. The land is sold upon a long instalment plan to the settlers, a mortgage being taken by the Salvation Army, and neither party has any cause to regret the business position. The men, so recently penniless, are supporting themselves and working their way towards an independent position, while the Salvation Army holds securities that increase yearly in value and so can afford to regard any slowness of repayment with equanimity. Fort Amity has a gross area of 1760 acres and all the soil is irrigated from the Arkansas river. There are 36 families settled upon it, trade is brisk, and every settler is prospering, though here, save for a few persons introduced as "pace-makers," the colonists were drawn from a class quite strange to agricultural pursuits. The Salvation Army made a serious initial loss over this colony also, having possibly both paid too much money for the land and disposed of it upon too easy terms to the settlers, while both errors were aggravated by the fact that the army purchased the land with borrowed capital bearing a high rate of interest. The land was naked prairie producing nothing but buffalo grass. Now it rears cattle, horses, and sheep, and bears many kinds of crops, fruit (the famous Canteloupe melons), and vegetables, notably sugar beet, which will probably become the most remunerative product, as a factory is being erected hard by. Mr. Haggard interviewed the settlers in both colonies and their words bore out the conclusion, which it is impossible not to accept, that we have here two highly successful social experiments.

We have given this account of Mr. Haggard's work as a Commissioner with some detail, so that the medical bearings of the matter may be better understood, for it is with these that we are more particularly concerned, and we may add, for the information of those to whom the reading of a blue book is an impossibility, that Mr. Haggard's report of his work and scheme for national land settlement can now be obtained, with prefatory comments by the author, in a volume entitled "The Poor and the Land," published by Messrs. Longmans, Green, and Co.

We need not recapitulate for a medical audience the contents of hundreds, perhaps thousands, of articles and letters that have appeared recently in THE LANCET, the message of all which has been that the overcrowding of our cities is responsible for a large proportion of our diseases. Epidemics are nourished in our slums and spread by a population living in dense masses and not only in dense masses but under unhygienic conditions. The physical deterioration of our race as a whole is far from being a proven fact, and in many directions the measure of its existence has been gravely exaggerated, but no medical man can doubt that the housing of our poorer urban classes is responsible for endless misery and suffering, for our high infant mortality, and for a vast heritage of wretchedness on the part of many of those infants who win through to maturity. Here are Mr. Haggard's words on this situation as the result of his earnest investigations:—

> I will go further even and state my profound conviction that the future welfare of this country depends upon whether or no it is possible to retain or to settle upon the soil a fair proportion of its inhabitants. Upon that soil men and women grow up in health and become furnished with those sober and enduring qualities which have made the greatness of our nation in the past, who, if they are relegated to the unwholesome conditions and crowded quarters of vast cities, must dwindle in body and change in mind.
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> Nor is this all, since in these cities, as statistics and experience prove alike, the families are smaller than those that are born upon the land. Children there are called, and, indeed, often are, "encumbrances." More of them die in infancy also, and of those who grow up many, at any rate in the second generation, are of a stuff so different that except for the accident of their common speech they might well be supposed to belong to another race
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> How is it possible, indeed, that children should be born in adequate numbers, or, if born, thrive, in the crowded slums of London or in the tenement houses of New York, and how can that people remain great and powerful whose supply of healthy children is curtailed? If these are lacking all the merchandise of the seas and all the treasures of the earth will not supply their place
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> Therefore, if the future safety of their countries is to be made secure against obvious and disastrous contingencies, in my humble judgment one of the chief aims of the Governments of the highly civilised white nations should be to keep population upon the land; to multiply the numbers of those modest rural homes where men and women desire offspring for their own sakes and to share their labours and their plenty.
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> This it seems to me, can best be done by turning to practical account the public credit and the waste forces of benevolence; by using these powers to counteract, at least to some extent, that tendency towards race ruin, a product of our western culture, whereof the end must be a progressive national weakening and depletion which if unchecked may well bring about national defeat at the hands of those ruder peoples of the world that remain land-dwelling and agricultural and again, as in past ages, culminate in national despair and death.

We do not believe that there is a medical man in the United Kingdom who has thought of what the depopulation of our country areas really means, and who has practical experience of the conditions of life in our urban slums, who will not endorse the words in which Mr. Haggard expresses his "profound conviction." Some may lay more stress upon one feature than another, and prominence could easily be given to the actual improvement that has taken place of late in the condition of life of the poor in our great cities. But, when all that is possible to be said has been said in this direction, there remains the fact that the overcrowding and vile housing of the poorer members of our industrial classes wages from day to day a bitter and often a too successful war against our improved sanitation and more liberal municipal government.

This being so, we think that the whole medical profession ought to take an interest in Mr. Haggard's scheme, of which the following detailed suggestions will allow them to understand the bearings:—

1. That the interest of a loan, or loans, of an amount to be fixed hereafter should be guaranteed by the Imperial Government or by the Imperial and certain Colonial Governments jointly, if that is thought desirable and can be arranged.
2. That the Poor-Law authorities in the large cities of Great Britain should be approached in order to ascertain whether they would be prepared to make a per capita contribution for every selected family of which the burden was taken off the local rates.
3. That a permanent officer should be appointed by the Imperial Government, to be known as the Superintendent of Land Settlements.
4. That the Salvation Army, or any other well-established and approved social, charitable, or religious organisation, should be deputed to carry out the work of selecting, distributing, and organising the settlers on land colonies anywhere within the boundaries of the British empire, who should remain in charge of such organisation until all liabilities were paid.
5. That no title to land should be given to any colonist until he had discharged these liabilities on which he should pay 5 per cent. interest and 1 per cent. sinking fund, recoverable in an agreed period of years.
6. That the possibility of establishing similar colonies in the United Kingdom should be carefully considered.
7. That, if these suggestions are approved, a Bill, to be designated the "National Land Settlements Act," embodying and giving life to them, should be laid before Parliament.

When the whole matter was submitted to the Governor-General of Canada by Mr. Haggard, who proceeded direct from his visits in the United States to lay his results before the Canadian Government, Lord Grey was found to be a hearty supporter of a land colonisation scheme. It is true that the financial advisers of the Canadian Government were not able to promise a guarantee of any loan towards the expenses of transmigration, but Lord Grey was prepared at any time to give ten townships (about 360 square miles) for the object propounded by Mr. Haggard on the sole consideration that the liberal terms of settlement prescribed by the laws of Canada should be complied with. As far as Canada is concerned, therefore, the way is paved for an experiment which might be sufficiently large to be conclusive, only a comparatively small sum of money—Mr. Haggard

hazards as a guess £300,000—being required to settle 1500 families, or 7500 souls reckoning five to the family.

We do not attempt to describe Mr. Haggard's visits to the Vacant Lot Cultivation scheme of Philadelphia and to the Salvation Army settlement at Hadleigh, but have confined our remarks to agricultural colonisation. We must point out, however, that while Mr. Haggard suggests the Salvation Army as a type of the suitable body to provide the machinery for carrying out his scheme no one need therefore believe that in supporting national land settlements, either according to American patterns or according to Mr. Haggard's theories, he is supporting a development only of the Salvation Army. American experience shows that in such matters the Salvation Army knows perfectly well when to efface itself, though it would not be true to its ideals if it did not employ its influence where it could do so fairly.

The question now is, What will be the issue of Mr. Haggard's commission? The liberal terms of the Canadian Government with regard to land settlement might possibly be obtained in this country, where the cost of transmigration would be reduced, by comparison, to nothing at all; but, on the other hand, there are good arguments for starting the new settlements on new territory, complete removal from the previous unfortunate environment being often a valuable consideration. But these matters are for discussion, as are all the details; the first thing to know is whether any notice whatever is going to be taken of a most valuable report. The idea of dealing comprehensively and in a statesmanlike way with a problem of the first national importance and the first scientific difficulty should appeal to all medical men, and we would beg our readers not only to read Mr. Haggard's report and most interesting book but to use their influence to see that experimental action is taken in respect of it. There is no need to understand the niceties of the fiscal question to see the good sense of most of Mr. Haggard's observations; there is no need to have views about corn duties, or indeed to have any political opinions at all, to recognise that the land settlements in the United States have brought into healthy occupation groups of families who would have otherwise been a burden to medical charity; there is no need to be aware of all the financial difficulties that surround the establishment of "garden cities" before wishing that an attempt at national land settlements should be made. And there is no need for us to say anything in support of the self-evident proposition that a healthy family on the land forms better national material than a sick family in a slum.

THE FIRST CONGRESS OF PHYSICAL THERAPEUTICS AT LIÉGE.

THIS Congress was held at Liége on August 12th, 13th, 14th, and 15th and proved a notable success, both in the quality of the papers presented and in the numbers of medical men attending.

Liége is situated on the river Meuse and is the centre of an important manufacturing district. In the vicinity of the town numerous collieries may be seen. The town was very full of visitors on account of the International Exhibition which is being held there this year, and hotel accommodation was extremely difficult to procure; but the secretaries of the Congress, Dr. de Munter and Dr. Gunzberg, had made excellent arrangements and succeeded in providing all the visitors to the Congress with comfortable rooms.

The meetings of the Congress were held in the University buildings and were opened by a general meeting on the morning of August 12th for the introductory addresses, for the election of presidents for the sections, and for the arrangement of the programme of proceedings. In the afternoon a number of papers on general subjects, interesting to all branches of the Congress, were read; among others there were papers on the Physiological Effects of Statical Electricity, on those of High Frequency, and on the General Indications for Radiotherapy, Mechanotherapy, and Hydrotherapy. Later the members of the Congress visited the exhibition and in the evening there was an informal reception at a restaurant in the exhibition grounds. This afforded the members a welcome opportunity for making one another's acquaintance and it was extremely interesting to assist at an assembly containing many of the leaders in physical therapeutics from all quarters of the globe.

On the next three days, Sunday, Monday, and Tuesday, the work of the Congress was arranged in four sections: one for Physical Exercises and Massage; one for Electrotherapeutics; one for Balneology, including treatment by heat and by light; and one for Radiology. In all these sections a considerable amount of work was got through and on Sunday afternoon there was an excursion to Spa where the members of the Congress were received by the town authorities and were entertained to dinner in the evening.

On Monday sectional meetings were resumed in the morning and in the afternoon, while in the evening there was a reception at the Hotel de Ville.

On Tuesday the labours of the different sections were concluded and the proceedings terminated by an assembly of all the sections for the further consideration of subjects of general interest. In the evening the members of the Congress dined together and this concluded the proceedings.

Among those present may be mentioned: Professor Bergonié (Bordeaux), Dr. Bélot (Paris), Dr. Freund (Vienna), Dr. Stenbeck (Stockholm), Dr. Moutier (Paris), Dr. Capriati (Naples), Dr. Donath (Budapest), Dr. Albert Weil (Paris), Dr. Kurella (Ahrweiler), Dr. Oudin (Paris), Dr. Guilleminot (Paris), Dr. Luraschi (Milan), Mr. W. Deane Butcher (London), and Dr. Francis Bishop (U.S.A.).

Considerably more than 100 members must have attended and the number of papers sent in also exceeded 100. Most of the European languages were represented among the papers contributed, one even being written in Esperanto. Official delegates of most of the European Governments were present, the representative of Great Britain being Dr. H. Lewis Jones, medical officer in charge of the electrical department of St. Bartholomew's Hospital, who also represented the Royal College of Physicians of London. Dr. de Munter and Dr. Gunzberg performed their difficult task of organising the Congress with great ability and worked very hard to insure its success. They were always to be found when wanted. Dr. Gunzberg spoke English with fluency and all the requirements of the foreign visitors were most readily attended to.

The exhibition of apparatus was good, Messrs. Gaiffe of Paris showing an extensive series of instruments and apparatus. Mr. Dean of Hatton-garden was the only exhibitor from Great Britain whom we noticed. In the section of physical movements a new piano was described which had been designed with the object of preventing the development of occupation paralysis in those learning to play the piano. The instrument itself was shown in the exhibition.

The subject of the practice of physical therapeutics by unqualified persons was considered in several papers. The best means of teaching physical therapeutics in universities and medical schools was also dealt with. It is probable that the movement set on foot at this first congress will in time lead to the rescuing of all branches of physical therapeutics from the hands of empirics and of establishing them on a firm scientific basis in the hands of medical men. The feeling in this direction was very strongly implied in all the sectional meetings.

MEDICINE AND THE LAW.

Constructive Homicide.

AT the Shoreditch coroner's court on August 18th Dr. W. Wynn Westcott held an inquest upon the body of a man, said to be 62 years of age, who had died immediately after a larceny from his person had been committed in the following circumstances. A youth had grabbed at and carried away his watch-chain; the deceased man chased the culprit for some distance when, apparently being overcome by an attack of syncope, he fell down; there was no evidence of assault or battery. He was helped on to a chair and vomited while propped up thereon. He was then placed in a pony-cart but before the surgery of the divisional surgeon was reached he had died. The necropsy revealed fatty deposits in the thorax; hypertrophied walls of the heart, the valves of which and the ascending aorta showed traces of atheroma; the left ventricle was firmly contracted; the right side was engorged with blood, as also were both pulmonary bases and the

brain. The sudden excitement had led to syncope and death. At the inquest the jury returned a verdict of "Natural death." A case such as this tests the ancient doctrine of "constructive homicide." Was the youth guilty of the felonious homicide of the deceased man? In strict law a man who commits a felony and in so doing causes the death of another person is guilty of that person's death. The most common instance is where a criminal abortion ends fatally owing to either the deficient or the too drastic antiseptic precautions adopted by the operator. In 1887 Mr. Justice Fitzjames Stephen instanced "a case where a man gives another a push with an intention of stealing his watch and the person so pushed having a weak heart ..... dies." In stating such a case the learned judge, who was also one of the greatest criminologists of our generation, objected to the strict application of the law as to "constructive homicide" in circumstances very similar to those under discussion.

Prosecutions under the Midwives Act.

A woman was prosecuted by the London County Council on August 13th at the South-Western police-court for an offence under the Midwives Act. As is now perfectly well known to midwives, since April 1st of this year it has been illegal for any woman not registered under the Act to use the title of midwife or any other title implying certification under the Act or implying that she is a person specially qualified to practise midwifery or that she is recognised by law as such. The defendant in this case had a brass plate outside her dwelling bearing the words, "Amelia Hollis, registered midwife." As a matter of fact, she had sought registration at the hands of the Central Midwives Board and had been refused. She had asked the Board to explain its refusal and had received a letter saying that it was contrary to its practice to give its reasons in such cases. The magistrate, Mr. de Grey, seems to have made a hurried reference to the Act and to have suggested an appeal to the Divisional Court, which is not accorded in such cases but only where a name has been removed from the roll. The advice, however, produced a plea of poverty and the complaint that "this is how poor women are crushed. I have several children and have been in practice in Wandsworth for 20 years. I am respected and the medical practitioners would give me a good character. What am I to do if my living is taken away?" To this Mr. De Grey answered that she must obtain a certificate from the Board. To a certain extent this reply was correct, but it is too late now for Amelia Hollis to be registered except after passing the examinations held under the Board's regulations. As a matter of law and as the magistrate might have told her, she can practise midwifery as much as she pleases until April 1st, 1910, but she must not claim qualifications for doing so which she does not possess. The plea that her living has been taken away may have affected Mr. De Grey's view of the case, for he only required Amelia Hollis to pay the costs of the proceedings against her, although possibly he may have also considered that as this was the first prosecution in London under the new Act, ignorance of the law might be taken into account. The Midwives Act was passed in the interests of pregnant women and for the protection of infant life, and women are not delivered of children in order to provide a living either for incompetent midwives or for competent ones. Anyone else who infringes the law by a false pretence, or by a dishonest action, might urge equally that it was done in order to earn a living. Mrs. Hollis would have been registered—the Act says that the applicant "shall be so certified"—if she had applied as directed by the Board and had produced evidence satisfactory to the Board that at the passing of the Act she had been for at least one year in *bonâ fide* practice as a midwife and that she bore a good character. Naturally the Board has declined to enter into discussions with would-be midwives as to the particular point upon which the evidence for the candidate has been unsatisfactory, and it is equally reasonable that the matter should have been left to its unfettered discretion.

SISTERS OF MERCY FROM THE WAR UNPROVIDED FOR.—A new society, called the "Society of Sisters of the Far East," has been formed in St. Petersburg to assist those sisters who have returned from the seat of war from sickness or other cause because many on their return home have found their places filled up and they are thus without means of support.

METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are the particulars of the awards recommended by the committee of distribution and confirmed at the meeting of the Council held on August 11th (*vide* THE LANCET, August 19th, p. 550):—

	£	s.	d.
GENERAL HOSPITALS.			
Charing Cross Hospital	1401	5	0
French Hospital	439	7	6
German Hospital	712	10	0
Great Northern Central Hospital	1506	5	0
Guy's Hospital	2398	15	0
Hampstead General Hospital	279	1	3
Italian Hospital	249	7	6
King's College Hospital	1810	18	9
London Hospital	6761	15	0
London Homœopathic Hospital	629	7	6
Phillips' Memorial Homœopathic Hospital	42	15	0
London Temperance Hospital	961	17	6
Metropolitan Hospital	1009	7	6
Mildmay Hospital	356	5	0
Miller Hospital and Royal Kent Dispensary	326	11	3
North-West London Hospital	629	7	6
Poplar Hospital	771	17	6
Queen's Jubilee Hospital	231	11	3
Royal Free Hospital	1484	7	6
St. George's Hospital	2291	17	6
SS. John and Elizabeth Hospital	380	0	0
St. John's Hospital, Lewisham	237	10	0
St. Mary's Hospital	2980	12	6
Seamen's Hospital Society	1745	12	6
The Middlesex Hospital and Convalescent Home	3235	18	9
Tottenham Hospital	712	10	0
University College Hospital	2084	1	3
Walthamstow, &c., Hospital	148	8	9
West Ham Hospital	676	17	6
West London Hospital	1246	17	6
Westminster Hospital	1900	0	0
CHEST HOSPITALS.			
City of London Hospital for Diseases of the Chest, Victoria Park	1199	7	6
Hospital for Consumption, Brompton	2812	10	0
Mount Vernon Consumption Hospital, Hampstead	997	10	0
Royal Hospital for Diseases of the Chest, City-road	724	7	6
Royal National Hospital for Consumption (Ventnor)	439	7	6
CHILDREN'S HOSPITALS.			
Alexandra Hospital for Hip Disease, W.C.	421	11	3
Banstead Surgical Home	29	13	9
Barnet Home Hospital	53	8	9
Belgrave Hospital for Children, S.W.	112	16	3
Cheyne Hospital for Incurable Children	178	2	6
East London Hospital for Children, Shadwell, E.	1068	15	0
Evelina Hospital for Sick Children, Southwark, S.E.	285	0	0
Home for Incurable Children, Hampstead	95	0	0
Home for Sick Children, Sydenham, S.E.	154	7	6
Hospital for Sick Children, Great Ormond-street, W.C.	1496	6	0
Kensington, for Children, and Dispensary	112	16	3
North-Eastern Hospital for Children, Hackney-road, N.E.	415	12	6
Paddington Green Hospital for Children, W.	380	0	0
St. Mary's Hospital, Plaistow, E.	344	7	6
St. Monica's Hospital, Brondesbury, N.W.	83	2	6
Victoria Hospital for Children, King's-road, Chelsea, S.W.	575	18	9
Victoria Home, Margate	47	10	0
Hospital for Hip Disease, Sevenoaks	53	8	9
LYING-IN HOSPITALS.			
British Lying-in Hospital, Endell-street, W.C.	71	5	0
City of London Lying-in Hospital, City-road, E.C.	102	10	0
Clapham Maternity Hospital	35	12	6
East End Mothers' Home	95	0	0
General Lying-in Hospital, Lambeth, S.E.	85	6	3
Queen Charlotte's Lying-in Hospital, Marylebone-road, W.	575	18	9
HOSPITALS FOR WOMEN.			
Chelsea Hospital for Women, S.W.	385	18	9
Hospital for Women, Soho-square, W.	445	6	3
Grosvenor Hospital for Women and Children, Vincent-square, S.W.	142	10	0
New Hospital for Women, Euston-road, W.C.	326	11	3
Royal Waterloo Hospital for Children and Women, Lambeth, S.E.	237	10	0
Samaritan Free Hospital, Marylebone-road, W.	510	12	6
OTHER SPECIAL HOSPITALS.			
Cancer Hospital, Brompton, S.W.	118	15	0
Middlesex Hospital, Cancer Wing	333	13	9
London Fever Hospital, Islington, N.	356	5	0
Gordon Hospital for Fistula, Vauxhall-bridge-road, S.W.	29	13	9
St. Mark's Hospital for Fistula, City-road, E.C.	237	10	0
National Hospital for the Diseases of the Heart, Soho-square, W.	181	13	9
Female Lock Hospital, Harrow-road, W.	296	1	3
Hospital for Epilepsy, Paralysis, and other Diseases of the Nervous System, Maida Vale, W.	102	2	6
National Hospital for the Paralysed and Epileptic, W.C.	1436	17	6
West End Hospital for Diseases of the Nervous System	336	1	3
Central London Ophthalmic Hospital, Gray's Inn-road, W.C.	198	6	3
Royal Eye Hospital, St. George's-circus, S.E.	356	5	0
Royal London Ophthalmic Hospital, City-road, E.C.	1282	10	0

	£	s.	d.
Royal Westminster Ophthalmic Hospital, Charing-cross, W.C.	201	17	6
Western Ophthalmic Hospital, Marylebone-road, W.	90	5	0
City Orthopædic Hospital, Hatton-garden, E.C.	195	18	9
National Orthopædic Hospital, Great Portland-street, W.	173	7	6
Royal Orthopædic Hospital, Oxford-street, W.	152	0	0
Royal Sea Bathing Hospital, Margate	356	5	0
St. John's Hospital for Diseases of the Skin	35	12	6
Western Skin Hospital, Great Portland-street, W.	11	17	6
St. Peter's Hospital for Stone, Covent-garden	89	1	3
Central London Throat and Ear Hospital, Gray's Inn-road, W.C.	53	8	9
Hospital for Diseases of the Throat, Golden-square, W.	59	7	6
London Throat Hospital, Great Portland-street, W.	40	7	6
Royal Ear Hospital, Frith-street, W.	32	1	3
Royal Dental Hospital of London, W.C.	293	6	3
National Dental Hospital, 149, Great Portland-street, W.	27	6	3
CONVALESCENT HOSPITALS.			
Metropolitan Convalescent Institution, Walton and Broad-stairs	771	17	6
Metropolitan Convalescent Institution, Bexhill	475	0	0
All Saints' Convalescent Hospital, Eastbourne	475	0	0
All Saints' Convalescent Home, St. Leonards-on-Sea	29	13	9
Ascot Priory Convalescent Home	89	1	3
Brentwood, for Children	11	17	6
Charing Cross Hospital Convalescent Home, Limpsfield	100	18	9
Chelsea Hospital for Women Convalescent Home, St. Leonards	47	10	0
Deptford Medical Mission Conva'escent Home, Bexhill	29	13	5
Mrs. Gladstone Convalescent Home, Mitcham	109	5	0
Friendly Societies Convalescent Home, Dover	106	17	6
Hahnemann Convalescent Home, Bournemouth	47	10	0
Hanwell Convalescent Home	23	15	0
Hendon, Ossulston Home	66	10	0
Herbert Convalescent Home, Bournemouth	35	12	6
Herne Bay Baldwin-Brown Convalescent Home	38	0	0
Homœopathic Hospital Convalescent Home, Eastbourne	17	16	3
Hemel Hempstead Convalescent Home	66	10	0
Mrs. Kitto's Convalescent Home, Reigate	59	7	6
Mary Wardell Convalescent Home for Scarlet Fever	100	18	9
Morley House Convalescent Home for Working Men	190	0	0
Alfred Bevan Memorial, Sandgate	261	5	0
Police Seaside Home, Brighton	59	7	6
St. Andrew's Convalescent Home, Clewer	118	15	0
St. Andrew's Convalescent Home, Folkestone	213	15	0
St. John's Home for Convalescent and Crippled Children, Brighton	38	0	0
St. Joseph's Convalescent Home, Bournemouth	71	5	0
St. Leonards-on-Sea Convalescent Home for Poor Children	130	12	6
St. Mary's Convalescent Home, Shortlands	26	2	6
St. Michael's Convalescent Home, Westgate-on-Sea	41	11	3
Seaside Convalescent Hospital, Seaford	142	10	0
Fairlight Convalescent Home, Hastings	23	15	0
COTTAGE HOSPITALS.			
Acton Cottage Hospital	71	5	0
Beckenham Cottage Hospital	103	6	3
Blackheath and Charlton Cottage Hospital	106	17	6
Bromley, Kent, Cottage Hospital	148	8	9
Bushey Heath Cottage Hospital	47	10	0
Canning Town Cottage Hospital	64	2	6
Chislehurst, Sidcup and Cray Valley Cottage Hospital	71	5	0
Coldash Cottage Hospital	26	2	6
East Ham Cottage Hospital	77	3	9
Eltham Cottage Hospital	55	16	3
Enfield Cottage Hospital	90	5	0
Epsom and Ewell Cottage Hospital	72	8	9
Hounslow Cottage Hospital	65	6	3
Kingston, Victoria Hospital	80	15	0
Livingstone Cottage Hospital, Dartford	105	13	9
Mildmay Cottage Hospital	19	0	0
Reigate and Redhill Cottage Hospital	136	11	3
Sidcup Cottage Hospital	35	12	6
Tilbury (Passmore Edwards) Cottage Hospital	59	7	6
Willesden Cottage Hospital	152	0	0
Wimbledon Cottage Hospital	54	12	6
Wimbledon South Cottage Hospital	54	12	6
Woolwich and Plumstead Cottage Hospital	61	15	0
INSTITUTIONS.			
Bolingbroke Hospital	296	17	6
Hospital for Invalid Gentlewomen, Harley-street	118	15	0
S. Saviour's Hospital and Nursing Home	119	18	9
National Sanatorium for Consumption, Bournemouth	118	15	0
Invalid Asylum, Stoke Newington	53	8	9
Firs Home, Bournemouth	23	15	0
St. Catherine's Home, Ventnor	29	13	9
Friedenheim Hospital for the Dying	368	2	6
Oxygen Home, Fitzroy-square	39	3	9
Santa Claus Home, Highgate	71	5	0
Free Home for Dying, Clapham	154	7	6
St. Luke's House, Pembridge-square, W.	142	10	0
Royal Mineral Water Hospital, Bath	59	7	6
DISPENSARIES.			
Battersea Provident Dispensary	130	12	6
Billingsgate Medical Mission	76	0	0
Blackfriars Provident Dispensary	23	15	0
Bloomsbury Provident Dispensary	17	16	3
Brixton, &c., Dispensary	66	10	0
Brompton Provident Dispensary	23	15	0
Buxton-street Dispensary	29	13	9
Camberwell Provident Dispensary	98	11	3
Camden Town Provident Dispensary	19	0	0
Chelsea, Brompton, and Belgrave Dispensary	59	7	6
Chelsea Provident Dispensary	16	12	6
Childs Hill Provident Dispensary	20	3	9
City Dispensary	59	7	6
City of London and East London Dispensary	11	17	6
Clapham General and Provident Dispensary	28	10	0
Deptford Medical Mission	28	10	0
Eastern Dispensary	42	15	0
East Dulwich Provident Dispensary	51	1	3
Farringdon General Dispensary	59	7	6
Finsbury Dispensary	53	8	9
Forest Hill Provident Dispensary	49	17	6
Greenwich Provident Dispensary	39	3	9
Hackney Provident Dispensary	20	3	9
Hampstead Provident Dispensary	71	5	0
Holloway and North Islington Dispensary	59	7	6
Islington Dispensary	74	16	3
Islington Medical Mission	48	13	9
Kensal Town Provident Dispensary	17	16	3
Kentish Town Medical Mission	23	15	0
Kilburn, Maida Vale, and St. John's Wood Dispensary	48	13	9
Kilburn Provident Medical Institution	57	0	0
London Dispensary, Spitalfields	16	12	6
London Medical Mission, Endell-street	128	5	0
Margaret-street, for Consumption	21	7	6
Metropolitan Dispensary	71	5	0
Notting Hill Provident Dispensary	17	16	3
Paddington Provident Dispensary	33	5	0
Portland Town Dispensary	16	12	6
Public Dispensary, Clare Market, W.C.	43	18	9
Queen Adelaide's Dispensary	38	0	0
Royal General Dispensary	27	6	3
Royal Pimlico Provident Dispensary	59	7	6
Royal South London Dispensary	61	15	0
St. George's and St. James's Dispensary	64	2	6
St. George's, Hanover-square, Provident Dispensary	35	12	6
St. John's Wood Provident Dispensary	55	16	3
St. Marylebone General Dispensary	55	16	3
St. Pancras and Northern Dispensary	35	12	6
St. Pancras Medical Mission	24	18	9
South Lambeth, Stockwell, and North Brixton Dispensary	47	10	0
Stamford Hill, Stoke Newington Dispensary	71	5	0
Tower Hamlets Dispensary	54	12	6
Walworth Provident Dispensary	17	16	3
Wandsworth Common Provident Dispensary	16	12	6
Westbourne Provident Dispensary	21	7	6
Western Dispensary	76	0	0
Western General Dispensary	142	10	0
Westminster General Dispensary	52	5	0
Whitechapel Provident Dispensary	41	11	3
Woolwich Provident Dispensary	28	10	0

Looking Back.

FROM

THE LANCET, *SATURDAY*, August 25, 1827.

FOREIGN DEPARTMENT.

Das Saugader System der Wirbel Thiere von Vin. Fohmann. Erstes Heft. Das Saugader System der Fische, mit xvilj. *Steindructafeln. Heidelberg und Leipzic, 1827.*

The Lymphatic System of the Vertebrated Animals. By V. FOHMANN; 1st part, containing the Lymphatic System of Fishes, with 18 lithographic plates.

HEWSON and ALEX. MONRO, towards the middle of the last century, proved the existence of lymphatics in birds, amphibia, and fishes, respecting the priority of which to the discovery, a dispute, as is well known, arose. Similar vessels were afterwards found in the same animals by various other anatomists. No one, indeed, who had investigated the subject for himself, entertained any doubt on the subject, till Magendie, in his rage for discovery, called Hewson's and Monro's statements in question, and endeavoured to substitute in their place Galen's notion of the general absorption of the veins. He could discover no lymphatics any where but in the neck of the swan and goose, which circumstance he communicated to the Academy in 1819. He says,

"Les recherches que je viens de faire connaître à l'Académie eurent lieu pendant l'été de 1816; depuis cette époque, j'ai disséqué plus de cinquante oiseaux de tous genres, carnassiers et autres; je me les suis procurés vivans, et je les ai ouverts apres les avoir fait manger, en moment ou leur digestion était en pleine activité. J'ai pu ainsi me convaincre que les vaisseaux chyleux et les canaux thoraciques n'existent pas chez les oiseaux; que les seuls traces des vaisseaux lymphatiques se voient au cou, ou l'on rencontre, comme dans les mammifères, des vaisseaux et des glandes lymphatiques, assez souvent remplis, chez les oiseaux vivans, par une lymphe diaphane et sans couleur. Quelle circonstance anatomique aura donc pu abuser Hewson; et lui faire commettre une erreur aussi grave que celle ou il est tombé? Le fait anatomique que je viens de faire connaître, et que chacun pourra facilement constater, est une puissante preuve à l'appui d'un fait physiologique que j'ai consigné dans un Mémoire lu à la première classe de l'Institut en 1809, savoir: que les veines sanguins jouissent de la faculté absorbante."

It is astonishing how Magendie came to such erroneous conclusions upon such a slight foundation, and risk his

reputation by such hasty assertions. In an appendix to his paper on the lymphatics in birds, he denied the existence of these vessels in amphibia and fishes.

For the purpose of refuting the opinion that birds had no lymphatic vessels, and no thoracic duct, Dr. L. A. Lauth occupied himself a long time at Heidelberg, with the dissection and injection of the lymphatics. In a valuable treatise, (Mémoire sur les vaisseaux lymphatiques des oiseaux et sur la manière de les preparer. Paris, 1825. 8vo. avec planches,) he describes the lymphatics of birds, and proves the correctness of Hewson's and Monro's discovery. And, in the valuable work before us, it is equally well shown that fishes possess lymphatics. In the plates, which are well done, we perceive the lymphatics of the stomach, liver, spleen, intestines, genital organs and fins, as well as the thoracic duct, of the gymnotus electricus, eel, pike, &c. Should, however, any one still regard Magendie's assertions as superior to those of Hewson's and Monro's, they need only go to the anatomical museum of Heidelberg, where their opinions would soon be shaken. On the connexion between the lymphatics and veins, in the vertebrated animals, we refer our readers to THE LANCET, Vol. X. p. 371.[1]

Public Health and Poor Law.

LOCAL GOVERNMENT BOARD.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Metropolitan Borough of Lewisham.—Mr. A. Wellesley Harris, discussing in his current annual report the subject of infantile mortality, expresses his dissent from the scheme recently put forward by Dr. Edmund Cautley "that milk companies should amalgamate and obtain Parliamentary powers somewhat similar to those which the old water companies possessed and that Parliament should grant to each milk company of a certain size or, better still, to an amalgamation of several companies an area of distribution, such as a parish or a borough, with certain definite instructions—viz., that the milk must be the undiluted product of the cow, uncontaminated by preservatives, filtered or bottled at the farm or local depôt, cooled down to 40° F., containing 3·0 to 3·5 per cent. of fat and not more than 100,000 micro-organisms per cubic centimetre, and at a price not exceeding 2*d.* a pint." We are afraid, with Mr. Harris, that this is a somewhat Utopian idea which is hardly likely to receive the sanction of Parliament within the lifetime of most adults. Nevertheless, the idea is a useful bogey by means of which milk producers may be made to approach a little nearer to the ideal of ordinary cleanliness if not to a bacteriological ideal. Certainly some of the conditions referred to above are already insisted upon in contracts for milk in connexion with large public establishments, and it would be well that these examples should be followed. As an alternative to the proposed milk companies Mr. Harris suggests something on the lines of the American system of certified milk which is apparently under the supervision of a milk commission created by the Medical Society of New York. This commission lays down certain standards as regards quality and cleanliness and invites the coöperation of milk dealers and farmers. Such milk dealers as comply with the regulations are entitled to have their milk certified by the commission. Mr. Harris proposes that municipalities might adopt a similar course with advantage. We trust that these aspects of the milk question will be discussed at the conference which is to take place in Paris in October next, and which we believe is concerned mainly with sterilised milk depôts. But the control of our milk-supplies assumes rather larger proportions than are covered by these depôts and we imagine that the broader issues are likely to arise out of the sterilised milk discussion.

Urban District of Richmansworth.—Dr. Mark Sharman reports that the water of the private company from which this district draws its supply of water is unduly hard and he thinks that the amount of "chalk" which the consumers have to endeavour to digest is a disadvantage and likely to produce many minor ailments which in their cumulative effect may be serious. Apparently the county medical officer of health shares the views of Dr. Sharman as to the desirability of a softening process. The directors of the company have, however, not seen their way to taxing the shareholders with the expense of softening, and apparently there are no means by which the company may be compelled to take action. Dr. Sharman regrets that there is no appeal to the Local Government Board on the matter. Perhaps, however, if representations were made to this latter authority it might find an opportunity of blocking any further Bills which the company may introduce into Parliament until the water under consideration is duly softened. But water companies are powerful organisations and they obtain a good deal of support from Parliament.

Metropolitan Borough of Paddington.—Dr. Reginald Dudfield, in discussing by-laws relative to houses let in lodgings, points out that the infliction of a rent limit, which has the effect of exempting houses above a certain rental from the operation of the by-laws, acts prejudicially by reason of the fact that it leads the landlords to raise the rent of their lodgings in order that they may be exempt. If, for instance, the rent limit was 7*s.*, a rise in rent of 2*d.* per week would raise the lodgings outside the operations of the by-laws. Probably, as Dr. Dudfield observes, there is no need, at least at present, for any rent limit whatever, inasmuch as the metropolitan borough councils are not likely to push their by-laws in question to at all a vexatious degree; indeed, we believe that in the view of the London County Council certain of the borough councils are very remiss in applying even the by-laws which they now possess.

Newport (Mon.) County Borough.—Dr. J. Howard-Jones is apparently not much impressed with the value of the voluntary notification of pulmonary tuberculosis. Only 19 cases were notified during 1904 and five of such notifications reached the health officer after death. Some 25 per cent. of the total number of cases appear to be notified but many are only notified during the last stages of the disease. The medical officer of health is in favour of using one of the small blocks of the fever hospital for early cases of pulmonary tuberculosis among the wage earners and he thinks that if six beds were provided the cost per bed would not exceed one guinea per week per patient.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 9111 births and 5195 deaths were registered during the week ending August 19th. The annual rate of mortality in these towns, which had been 13·4, 15·0, and 17·0 per 1000 in the three preceding weeks, further rose last week to 17·4 per 1000. In London the death-rate was 17·0 per 1000, while it averaged 17·5 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·2 in Hornsey, 7·0 in Hastings, 7·6 in Handsworth (Staffs.), 7·9 in Northampton, 8·2 in King's Norton, and 8·7 in Reading; the highest rates were 23·2 in Sunderland, 23·7 in Grimsby, 23·8 in Hull, 23·9 in Manchester, 24·2 in Hanley, 25·9 in Wigan, 27·2 in Tynemouth, and 27·3 in St. Helens. The 5195 deaths in these towns last week included 1574 which were referred to the principal infectious diseases, against 1101, 1507, and 1626 in the three preceding weeks; of these 1574 deaths, 1336 resulted from diarrhœa, 79 from measles, 58 from whooping-cough, 41 from scarlet fever, 34 from diphtheria, and 26 from "fever" (principally enteric), but not any from small-pox. No death from any of these infectious diseases was registered last week in Hastings or in Burton-on-Trent; among the other towns they caused the lowest death-rates in Hornsey, Bournemouth, Smethwick, and Halifax; and the highest rates in West Ham, East Ham, Walsall, Grimsby, Wigan, Sheffield, Hull, and Rhondda. The greatest proportional mortality from measles occurred in Wolverhampton and Barrow-in-Furness; from scarlet fever in Bootle and Blackburn; and from diarrhœa in West Ham, East Ham, Norwich, Walsall, Aston Manor, Grimsby, Wigan, Warrington, Sheffield, Hull, and Rhondda. The mortality from diphtheria, from whooping-cough, and from "fever" showed no marked excess in any of the large towns. No fatal case of small-pox was registered last week either in London or in any of the 75 other large towns. The Metropolitan Asylums Hospitals contained no small-pox patients at the end of last week, against three, one, and none at the end of the three preceding weeks; no new case

[1] See "Looking Back" in THE LANCET, June 18th, 1904, p. 1744.

was admitted during the week. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 2550, 2632, and 2670 on the three preceding Saturdays, had further risen to 2735 on Saturday last, August 19th; 361 new cases were admitted during the week, against 352, 366, and 355 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 116, 111, and 112 in the three preceding weeks, increased to 117 last week, and were 11 above the number in the corresponding period of last year. The causes of 41, or 0·8 per cent., of the deaths registered in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in London, West Ham, Portsmouth, Bristol, Leicester, Nottingham, Bradford, Leeds, Newcastle-on-Tyne, and in 47 other smaller towns; the largest proportions of uncertified deaths were registered in Ipswich, Birmingham, Liverpool, Rochdale, Preston, Sheffield, and Tynemouth.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 15·3, 14·8, and 13·8 per 1000 in the three preceding weeks, rose again to 15·1 per 1000 during the week ending August 19th, but was 2·3 per 1000 below the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 10·9 in Aberdeen and 13·3 in Edinburgh, to 16·6 in Leith and 25·6 in Paisley. The 505 deaths in these towns included 44 which were referred to diarrhœa, 16 to whooping-cough, eight to measles, five to "fever," and one to scarlet fever, but not any to small-pox or diphtheria. In all 74 deaths resulted from these principal infectious diseases last week, against 66, 94, and 67 in the three preceding weeks. These 74 deaths were equal to an annual rate of 2·2 per 1000, which was 3·1 per 1000 below the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 39 59, and 44 in the three preceding weeks, were again 44 last week, and included 28 in Glasgow, six in Aberdeen, four in Paisley, three in Edinburgh, and two in Leith. The deaths from whooping-cough, which had been 14, 14, and ten in the three preceding weeks, rose again last week to 16, of which five occurred in Glasgow, five in Edinburgh, three in Paisley and two in Dundee. The fatal cases of measles, which had been eight, 15, and eight in the three preceding weeks, were again eight last week, and included three in Glasgow, two in Edinburgh, and two in Perth. The deaths referred to different forms of "fever," which had been two and one in the two preceding weeks, rose again last week to five, of which three were registered in Glasgow. The deaths from diseases of the respiratory organs in these towns, which had been 70, 48, and 33 in the three preceding weeks, rose again last week to 41, but were six below the number in the corresponding period of last year. The causes of 13, or nearly 3 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 20·8, 21·2, and 19·7 per 1000 in the three preceding weeks, rose again to 19·9 per 1000 during the week ending August 19th. During the past four weeks the death-rate has averaged 20·4 per 1000, the rates during the same period being 16·1 in London and 15·5 in Edinburgh. The 145 deaths of persons belonging to Dublin registered during the week under notice were two in excess of the number in the preceding week and included 21 which were referred to the principal infectious diseases, against 22, 29, and 25 in the three preceding weeks; of these, 18 resulted from diarrhœa and one each from measles, from scarlet fever, and from fever, but not any from small-pox, diphtheria, or whooping-cough. These 21 deaths were equal to an annual rate of 2·9 per 1000, the death-rates last week from the principal infectious diseases being 5·2 in London and 1·7 in Edinburgh. The fatal cases of diarrhœa, which had been 20, 25, and 24 in the three preceding weeks, further declined last week to 18. Seven inquest cases and three deaths from violence were registered; and 53, or more than a third, of the deaths occurred in public institutions. The causes of four, or nearly 3 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Major C. G. Spencer is appointed Professor of Military Surgery, vice Surgeon-General W. F. Stevenson, C.B., and Lieutenant-Colonel H. I. Simpson, C.M.G., Professor of Military Medicine at the Royal Army Medical College. Surgeon-Major T. McC. Foley, A.M.R., assumes charge of troops and military hospital, Scarborough. Lieutenant-Colonel S. C. B. Robinson performs the duties of Administrative Medical Officer, Colchester, during the absence on leave of Colonel W. B. Slaughter. Lieutenant R. G. Anderson, Lieutenant C. P. Thomson, Lieutenant G. B. F. Churchill, and Lieutenant F. E. Roberts join at Aldershot and are posted to the Cambridge Hospital for duty. Lieutenant W. S. Nealor and Lieutenant E. G. R. Lithgow join at Aldershot and are posted to the Connaught Hospital for duty.

VOLUNTEER CORPS.

Rifle: 1st Volunteer Battalion the Royal Warwickshire Regiment: Supernumerary Surgeon-Lieutenant-Colonel (Surgeon-Lieutenant-Colonel, Army Medical Reserve of Officers) E. L. Freer is granted the honorary rank of Surgeon-Colonel (dated August 19th, 1905); Supernumerary Surgeon-Lieutenant-Colonel and Honorary Surgeon-Colonel (Surgeon-Lieutenant-Colonel, Army Medical Reserve of Officers) E. L. Freer resigns his commission, with permission to retain his rank and to wear the prescribed uniform (dated August 19th, 1905). 1st (Exeter and South Devon) Volunteer Battalion the Devonshire Regiment: Supernumerary Surgeon-Captain R. Pickard, on ceasing to do duty with the Devon Bearer Company, Royal Army Medical Corps (Volunteers), is absorbed into the Establishment (dated August 19th, 1905). 1st Volunteer Battalion the Royal Welsh Fusiliers: James Laing Duncan to be Surgeon-Lieutenant (dated August 19th, 1905).

THE BENEFICENT BULLET.

The report just published by three Russian army doctors in Manchuria, Dr. Zoge von Manteuffel, Dr. Kholine, and Dr. Zeldovitch, on the character of the wounds inflicted by the Japanese rifle bullet confirms existing evidence that modern gun-making tends to increase the death-roll of a battle but to reduce the list of wounded to a minimum, while the amount of suffering endured from gunshot wounds is growing incredibly small. During the South African war the Mauser bullet was shown to have dealt gently with its victims while performing its deadly work, but the humanitarian perfection attained by the Japanese rifle is so much greater than that of the Mauser as to sound almost like a dream. The sober medical report from the hospital wards reminds one of the old Arabian story of the skilful executioner whose victim's head remained attached to the trunk even after the Damascus blade had whistled through the neck, but fell off as soon as the condemned man bowed in supplication before the Cadi. Owing to the extraordinary velocity of the Japanese missile, says Dr. Kholine, there is no portion of the human structure that can deflect it from its course. A book three and a half inches thick and bound in wood would fail to do so. Wounds caused by it perforate the body in a clean straight line drawn with mathematical accuracy, the exit of the bullet being marked by no greater orifice than the entry, not the tiniest bruise being apparent, and the two openings being so small that in many cases the surgeon fails to discover them without the help of the patient. Dr. von Manteuffel cites cases of officers shot through leg, chest, or neck and still able to retain their commands as if nothing had happened. Dr. Zeldovitch saw soldiers on the march with wounds straight through the thorax which they had received some 30 kilometres back along the line of retreat and Dr. Kholine speaks of a man remaining on active service in spite of a bullet wound right throught the chest, between the second and third ribs. The elasticity of the pulmonary tissue is supposed to contribute to these astonishing results, while as for abdominal wounds peritonitis seems practically unknown, the fibre of the intestine closing automatically behind the bullet, which never carries a particle of the clothing into the wound, a clear-cut snip like that made by a pair of tailor's scissors being all that is observable upon the cloth. These results may well be contrasted with those reported after the massacre of Jan. 22nd this year in St. Petersburg. There, for fear of killing people at a great distance, the troops had been ordered to fire at the

ground a few feet before the first line of the crowd. The wounds were consequently all caused by ricochetting bullets and resembled in their horrible character the effects of bursting bombs.

NEW BARRACKS AT NORWICH.

The Secretary of State for War will, on the first Thursday in October, lay the foundation-stone of the new cavalry barracks to be erected at Norwich at a cost of some £200,000. When, on account of sanitary deficiencies, the existing barracks were condemned some time ago a representative committee of the leading citizens purchased 20 acres of ground as a site for new military headquarters.

Correspondence.

"Audi alteram partem."

INEBRIETY A DISEASE AND THEREFORE TO BE TREATED BY THE MEDICAL PROFESSION.

To the Editors of THE LANCET.

SIRS,—Much credit belongs to Dr. J. S. Bolton for emphasising the fact that alcoholism should be regarded as a disease and should be treated by those qualified to treat disease. It is greatly to be regretted that the medical profession have in the past neglected fully to grasp the situation as expressed in these views, for the result has been the springing up of a host of lay, and it may be said quack, "doctors" and their attendant clerical satellites. Good may have come from some of these secret remedies, but the very fact that they are secret and that their benefit, if any, is denied except at exorbitant charges by their so-called "discoverers" and pushers to the masses who need them makes them, to say the least, questionable. It should be recognised that alcoholism can be treated in suitable cases by a medical practitioner whilst the subject of it remains in his home and in his business surroundings and that treatment there has its many advantages. On the other hand, there are numerous instances where for the success of the treatment it is undoubtedly better for the patient, often of the upper classes, quietly to leave home and enter voluntarily a thoroughly well-conducted institution where recognised and satisfactory treatment can be carried out. I may mention but a few advantages. He enters upon new surroundings which produce new trains of thought and relieve the nervous system. He is no longer under the critical eye of relatives or friends who are, perhaps justifiably, suspicious that the treatment will be a failure, but in the midst of others who have already benefited and can therefore encourage. He is under the constant, though not irksome, supervision of a thoroughly competent medical observer. He may have gone from the town into the country and the tonic effect of the pure air is a great aid to his recovery. The treatment can be carried out with great regularity and precision so that he gets all the good that residence at a spa with its routine and restrictions, cheerfully borne, bring about. Further, a very exact record of his case, together with its after-history, can be made and the statistics thus gained may prove of invaluable help in the future treatment of cases. It would seem that the treatment by atropin combined with strychnine is having very distinct and lasting success and it behoves every practitioner to make himself fully acquainted with its details, and if unable to carry out the treatment himself with the patient near him to seek the help of an institution where it is systematically undertaken solely by a qualified medical practitioner.

I am, Sirs, yours faithfully,

Harley-street, W., August 18th, 1905. W. MCADAM ECCLES.

ASPIRATION IN DISEASES OF THE EAR AND NOSE.

To the Editors of THE LANCET.

SIRS,—I am pleased to see in THE LANCET of August 12th (p. 434) an article by Dr R. Sondermann of Dieringhausen on his apparatus for the use of aspiration in diseases of the ear and the nose, of which I am in a position to speak with strong approval, having made use of it in my practice since reading his original papers in the *Münchener Medizinische Wochenschrift* and the *Archiv für Ohrenheilkunde;* I have also repeatedly recommended it to my *confrères*. I have found it of particular value in relieving headaches due to catarrhal conditions of the sinuses; in point of fact, more than one patient under my care at present is most enthusiastic with regard to the relief afforded by it, one lady in particular insisting that she hardly knows how she could live without it. As regards the ear, it is a very efficient substitute for Siegel's exhausting speculum, and is much less uncomfortable in its application. It can therefore be used for the extraction of discharges from the middle ear, after perforation, whether by paracentesis or otherwise, in cases such as those of acute suppurative otitis media in which the driving out of the secretion by means of inflation through the Eustachian tube involves the risk of infection of the mastoid antrum. Messrs. Mayer and Meltzer have, at my request, added this instrument to their stock.

I am, Sirs, yours faithfully,

Cavendish-square, W., August 17th, 1905. DUNDAS GRANT.

MIDGES.

To the Editors of THE LANCET.

SIRS —As one who has suffered, and is still suffering, from the effects of midge-bites may I give my experience at an East Coast watering place recently? My wife and two children went to Saltburn a few weeks before I did and spent most of their time on the sands; during all this time none of them were bitten by midges. After I came my wife and I spent a considerable time on the golf links a little inland and whilst in search of lost balls frequently went into hedges, pits with rank thick grass, brambles, &c., at the bottom, and sometimes into a wood which was specially placed to trap a "pulled" drive. A few hours after our first visit to the golf links we were both badly bitten and so were numbers of other golfers. The children escaped entirely through not coming into any of the places mentioned. Midges, I believe, collect under trees, near hedges, and amongst thick rank vegetation in places fairly protected from wind. Avoid such places and you will be free from their annoyance. I tried thickish coatings of ointment but they seemed to bite all the same. As regards remedies I tried hazeline, izal, equal parts of liquor ammoniæ fortior and tinctura opii, strong lead and opium lotion, &c., but nothing eased the irritation so quickly or so thoroughly as menthol dissolved in olive oil in the strength of 1 in 4 (i.e., as much menthol as the oil will take up). May I warn your correspondent against an heroic mode of treatment I adopted because I had known it to ease the irritation of small-pox papules—i.e., the application of pure carbolic acid by means of a fine camel-hair brush just touching each spot with it. I am deeply sorry to this day (more than a fortnight after the application) that I allowed apparent analogy to lead me astray. I am Sirs, yours faithfully,

MEREDITH YOUNG, M.D. Edin.

Stockport, August 22nd, 1905.

THE SPA TREATMENT OF CIRCULATORY DISORDERS.

To the Editors of THE LANCET.

SIRS,—In an interesting article published in your columns under the above heading the following statement occurs referring to Llangammarch Wells: "Judged from the continental standard of comfort and the provision of amusement and distraction this must be regarded as a health resort *in posse* rather than *in esse*." This statement is calculated to do considerable harm to the interests of this spa and is all the more serious inasmuch as for the past two years no expense has been spared by the proprietors in developing the resources of this establishment on really up-to-date lines. And in this work attention has been equally divided between the social and medical requirements of the visitors. An extensive bathing installation has recently been established at considerable cost in which various kinds of baths can be administered. In the reclining baths, constructed of solid porcelain, both barium and artificial Nauheim baths are given, and in addition douche, needle, shower, and wave baths are provided. There are also facilities for treatment by massage and resistant exercises. Shooting, fishing, and

golf over beautiful mountain scenery are not the least attractions of the place. As to a band, most of the cardiac patients who come here are glad to find that at any rate this form of entertainment is conspicuous by its absence.

I am, Sirs, yours faithfully,

JOHN GRIFFITHS.

Bishopsgate-street Without, E.C., August 17th, 1905.

ASSISTANT MEDICAL OFFICERS AT DARENTH ASYLUM.

To the Editors of THE LANCET.

SIRS,—We have felt it our duty to resign our appointments as second, third, and fourth assistant medical officers at the Darenth Asylum of the Metropolitan Asylums Board in order to call attention to the difficulties we have met with in the fulfilment of our duties. It may not generally be known that the assistant medical officers under the Metropolitan Asylums Board rank as subordinate officers, while the chaplain, steward, matron, and head schoolmistress are principal officers. The result of this is that directions for the care of patients given by an assistant medical officer may be revised by a lay officer of the superior rank and the assistant medical officer's only remedy is an appeal to the superintendent on every such point. This is no merely hypothetical objection but is in actual experience a difficulty which does arise and for which the remedy officially provided is obviously inadequate. We are prepared if necessary to quote instances from our own experience of matters exclusively medical in which a lay principal officer has modified the directions of an assistant medical officer. It is quite clear that no lay officer can be allowed to interfere in medical matters without direct detriment to the interest of the patients. That the assistant medical officer may appeal to the superintendent does not, unfortunately, secure the patient from harm. Such intrusions of unqualified persons into purely medical matters are frequent and entail upon the assistant medical officer an almost continuous series of complaints. Moreover, and this is a much more serious aspect of the case, by the time the complaint is made the harm may be done and the patient have already suffered from the effect of ignorant interference.

Attempts have been made before to remedy this paradoxical state of affairs, but the facts as they are at present demonstrate the completeness of the failure those efforts have met with. From the status of the assistant medical officers and the accommodation provided for them we are led to suspect that the Metropolitan Asylums Board is not particularly anxious to get as assistant medical officers men who will stay for any length of time at their asylums. Now it is obvious that if, as it often is, the average stay of an assistant medical officer at an asylum is not more than a few months his opportunities of getting any thorough grasp of the condition and progress of his patients are very imperfect, and the interests of the patients cannot fail to suffer by this. These being the conditions under which we have been compelled to do our work, we have been led to the conclusion that it is our duty to resign our appointments.

We are, Sirs, yours faithfully,

FRANCIS R. BARWELL.
GERARD A. HERKLOTS.
H. P. KENNARD.

Darenth Asylum, Dartford, Kent, August 22nd, 1905.

HOMBURG.

THE PROBLEM OF MINERAL WATER HEALTH RESORTS.—WHAT SHOULD, AND WHAT DOES, DETERMINE THEIR POPULARITY.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

PART II.[1]

THE HOMBURG OF TO-DAY: SANITARY IMPROVEMENTS AND ECONOMIC ERRORS.

Homburg, August 4th, 1905.

IN 1872, as already stated, there were 21,001 visitors at Homburg. On the first day of the new year the gaming tables were removed and in 1873 Homburg had only 9287 visitors. Still, this was very much better than had been anticipated and it conclusively proved that after all the gaming tables were not the sole attraction. It showed that the beautiful surrounding country, the salubrious climate, and, above all, the beneficial effects of the mineral waters would suffice to make Homburg a popular health resort. But with this end in view a different policy would have to be followed and it would be necessary to consider more especially those who, in spite of the abolition of the gaming tables, had remained faithful to Homburg. These were for the most part English people and prominent among them was the Prince of Wales, now His Majesty King Edward VII. The English visitors constantly complained of the bad odours and generally speaking of the insanitary conditions of the town. Those who made it their business to let apartments attempted to fit them out in accordance with English taste and habits and the hotel proprietors likewise endeavoured to cater for British visitors. The beautiful park which the brothers Blanc had laid out and the palatial casino which they had built now became public property and here English games of every sort—croquet, lawn tennis, and golf—are encouraged so as to please and to attract the English. But it soon became necessary to require payment from the visitors who frequented the Casino, or Kurhaus as it is now called, and the mineral springs; this took the form of a Kurhaus tax of 16, now of 20, marks which every visitor who remains more than three days has to pay, and this sum, added to the interest on the £150,000 saved out of what the brothers Blanc had been made to pay, constitutes a fairly good income. But what would have been the position of the town of Homburg if it had been obliged to build a kurhaus and to provide a park at its own cost? As it is, the town has only to bear the expense of the upkeep of these places and to help in this it possesses an endowment of about £150,000. Nevertheless in spite of all these very substantial advantages, Homburg has not recovered its old prosperity; some progress has been made but it was laborious and gradual. Thus, for instance, under the stimulus of the gambling tables the number of visitors, which amounted to 9570 in 1860, increased in 12 years to 21,001 in 1872. Without the gambling tables the number of visitors, which had fallen to 9287 in 1873, increased in 12 years to 11,679 in 1885. The eloquence of these figures is keenly appreciated by the citizens of Homburg. One of the best records was that of the year 1890, when there were 12,920 visitors. In 1903 there were 12,449, so the town is still far from regaining its former prosperity and yet, from the health point of view, Homburg is much more deserving of patronage than in the old gambling days.

First and foremost, Homburg is now properly drained. Excepting in the outskirts that are not frequented by the visitors all the cesspools have been abolished. Mr. Lindley, a well-known sanitary engineer from Frankfort, was intrusted with the carrying out of a scheme of drainage based on the separate system and on the house-to-house ventilation of the public sewers by each private soil-pipe. So far as the streets are concerned this method seems to work very successfully and I was nowhere able to detect the slightest odour. This system has been the subject of an immense amount of controversy and it would be interesting if a scientific investigation could be made to ascertain what are the practical results. Unfortunately there seem to be at Homburg very little public spirit and knowledge of public affairs. It will scarcely be credited but it is, nevertheless, a fact that I spoke to several prominent citizens and I found that they had not the remotest conception as to how their own town or even their houses were drained. They all said that the drainage was very good and that it was the Lindley system, but when I endeavoured to enter into details no one could explain what constituted good drainage or what were the special views held on the subject by Mr. Lindley. Then when in my turn I explained that Mr. Lindley advocated the suppression of the intercepting chamber or disconnecting trap generally placed between the private house and the public sewer, and when I added that, instead of thus shutting out the sewer airs, he sought, on the contrary, to draw them away so that they might be discharged over the private houses by prolonging the soil pipes above the roofs, some of my hearers were utterly astounded, not to say a little alarmed. Of course, an obvious objection to this system is that these soil pipes may pump sewer air into neighbouring bedroom windows. The answer to this is that there are so many soil pipes that when they are all used as ventilators the sewers are so thoroughly ventilated that the sewer air can no longer be injurious. Then I ascertained

[1] Part I. was published in THE LANCET of August 12th, 1905, p. 484

from the municipal authorities that the rule is at Homburg that the soil pipe must be carried at least one metre higher than the nearest window and two metres away from it. In any case such soil pipes coming from well-ventilated sewers represent all the difference between civilisation and barbarism when compared with the abomination of the old and leaking cesspool.

Of course, the perfect success of this system depends on the condition of the sewers themselves and to the extent to which they may be considered self-cleansing. The town of Homburg is well situated for drainage by natural gravitation. In most streets the fall, I should imagine, would be sufficient and the authorities state that the maximum fall is 1 in 20 but there are some sewers, I presume main collectors, where the fall is only 0·266 per cent. or 1 in 350. Nevertheless, the municipal authorities inform me that what cleansing is necessary beyond that produced by the normal flow in the sewers is done by opening manholes and flushing the sewers from the streets. It is only, I am assured, on very rare occasions that rods or other cleansing contrivances have to be pushed through the sewers. This, of course, is as it should be particularly when the separate system is adopted. The sewers for the separate system are circular hardware pipes varying from eight to eighteen inches in diameter. As they only receive the soil and slop waters from the houses, the amount that has to travel through can be calculated with great precision. It is then comparatively easy to estimate what the size or diameter of the sewer should be and at what inclination or fall it should be laid so that the sewage will travel at a sufficient rate to prevent deposits accumulating. If this is correctly done then the sewer can be qualified as self-cleansing. Now if there is a fairly large number of such self-cleansing sewers in Homburg the sooner the fact is made known the better for the renown of that town. Such sewers are very rare and it is equally, or even more, rare to find a sewer that is ventilated in an absolutely satisfactory manner. But on inquiry I was told that no experiments have been made to measure the velocity and the volume of the air travelling through the sewers. This is a great pity, for the experiment made in draining the town of Homburg is evidently of such a nature as to be of considerable interest to all concerned in sanitation. Moreover, any testimony as to favourable results would be of great value in attracting visitors to the town; while, on the other hand, there is no need to fear hostile criticism, for where is the town that can boast of an absolutely perfect system of drainage? It must also be borne in mind that it is the fear of bad drainage that prevents many British families from going to the continent.

In accordance with the separate system the rain water flows from the street gutters into separate and well-built sewers that measure from three to four feet in height and two feet in width. The outfalls are in the nearest natural watercourses. The outfall for the smaller sewers which convey the slop water and soil is at a small sewage works not quite far enough away from the town, particularly as at present no really satisfactory method of purifying the crude sewage has been applied.

In regard to water-supply, Homburg is fortunately situated. From the Taunus hills and by tunnelling horizontally the purest water can be obtained in unlimited quantities. Formerly the inhabitants drank water from wells and duly suffered in consequence. Then there were small waterworks and a good but insufficient supply was obtained. Of late years these waterworks have been so enlarged that the water-supply is now practically unlimited and if more were wanted it would only be necessary to bore further. The water is very pure, the solids barely amounting to 5 per 1000. The total hardness by the English method of estimation is equal to two degrees. Thus Homburg can boast of an exceptionally good and abundant water-supply. The last private well was abolished some five years ago. Unfortunately many of the inhabitants of Homburg who could make the greatest use of these advantages are ignorant of their existence or are incompetent to give an intelligent explanation as to the very creditable works which have been undertaken by the town. There seem to be a great absence of public spirit and ignorance of the duties of citizenship. For instance, when I inquired what methods were adopted to secure the purity of the milk-supply people were quite surprised to find that I was not satisfied when told that the police looked after the milk. The fact that much of the milk comes from districts where the Homburg police have no jurisdiction is an elementary difficulty which had not occurred to the minds of persons not accustomed to debate such public questions. It was always, I will not say from the officials in authority, but from the one official attending to the one department in question that I had to obtain information. In this manner I did ultimately ascertain that there are three sorts of milk sold in Homburg. The worst is skimmed milk and there is no legal limit to the skimming. But though the dairyman may take away as much as he can if he adds one jot or tittle to the milk then the law is down upon him at once. So that if the skimmed milk seems very weak its weakness, in any case, is not due to the addition of water. To prevent mistakes the police insisted that the skimmed milk should be sold in red cans, a sort of starvation danger-signal can, but the red paint wore off with singular rapidity. Now the rule is that skimmed milk must be sold in square cans and this measure has proved of great service, especially in regard to infants. The ordinary milk is sold in round cans and up to 1898 the police only examined the specific gravity of the milk. Now, under the direction of Dr. Rüdiger who is a member of the town council, the milk is also analysed and when found to contain less than 3 per cent. of fat the milk dealer is prosecuted. Some 30 samples collected by the police are thus examined every month. The amount of the fine imposed increases as the offence is repeated. If the milk, however, not only fails to contain 3 per cent. of fat but has had some foreign substance added then the fines are very heavy, amounting at times to £10, and on some occasions imprisonment has been inflicted. Finally, there is a third sort of milk sold only in sealed bottles and this comes from cows fed solely on dried food. It is expensive and is used for infants and invalids. The cows that provide this milk are near at hand and the veterinary surgeon goes to inspect both the cows and their stables. This latter form of control is most important, but with transit by rail ordinary milk comes from such distances and various sources that no efficient means of control have been devised. Indeed, this problem has been widely discussed in most large centres, notably at London and Manchester

The police also visit the various shops at Homburg and collect samples of different foods and have them analysed from time to time. Moreover, and though this is a matter that does not concern the town of Homburg it is of great importance to visitors who like to make excursions, the water-supply for many miles round has been carefully analysed. The local authority, which corresponds to the county council in England, has jurisdiction over four small towns, of which Homburg is the principal one, and 32 villages. As is usual in rural districts, wells and pumps supplied most of the drinking water. Dr. Rüdiger was appointed ten years ago to analyse all this water. He is bound to analyse the water of every pump and well at least once in two years and more frequently whenever necessity arises. Naturally it was found that the water was sometimes contaminated and then trouble ensued. The result has been that pressure was brought to bear and the peasants were finally induced to drill into the neighbouring mountains for pure water. Several villages would join together and thus start water works. At first the peasants grumbled loudly against the extra taxation thus occasioned but they have now fully realised the great benefit. One important factor in bringing about this reform has been the necessity of supplying the War Office with analyses of the water of every well and pump available. Of course, it is obvious that when troops march through a village the officers must know whether they may allow the soldiers to drink water from the village pump or wells. When a company of troops halts in a village and the inhabitants find the soldiers are under strict orders not to drink in that village because the water supply is not safe this serves as a very effective object lesson to the villagers. Thus there are now hardly any pumps or wells round and about Homburg and picnics and outings may be enjoyed without fear of typhoid fever.

Another great source of health and security is the magnificent and model slaughter-house which was built on the out-skirts of Homburg a few years ago. This structure I hope to describe in detail when dealing with the general question of slaughter-houses; for the moment it must suffice to say that there is every convenience for the maintenance of scrupulous cleanliness in the slaughtering, the handling of

carcasses, the preparation of meat, and for the careful inspection of samples with the microscope. Meat may therefore be consumed at Homburg with every sense of security that the organisation on modern lines of an efficient municipal slaughter-house can give. The slaughter-house is well away from the town, as are also the general hospital and the hospital for infectious diseases. Nor are there any unwholesome industries in or about Homburg.

All these great sanitary advantages have been brought about in a large measure by the pressure of the British visitors. As one of the principal physicians of Homburg remarked to me, it is the English who have caused well-built and well-drained houses to be constructed. In Homburg, as in Egypt, they have brought into existence a great number of comfortable villas. Nowhere will the English find so much accommodation of the English style as at Homburg. But if the English have done much good they have also done harm and in this they have been too readily assisted by unintelligent hotel-keepers. The English, for instance, have introduced the custom of late dinners and heavy drinking. For a person with a weak heart or faulty digestion to have champagne dinners at 8 30 in the evening must be injurious, particularly when followed by illuminations, fireworks, and dancing. All this may seem very profitable to the hotel-keepers but when, as a consequence, patients return to England and tell their friends that they have not benefited by their stay at Homburg it prevents many intending visitors from coming. Then, though it is necessary that there should be some amusements, many patients interfere with their "cure" by over-fatiguing themselves at games and athletic sports.

In this respect the climax was reached last year when the sporting element carried all before it and, to the great injury of the town, organised the international Gordon-Bennett motor-car race in the immediate vicinity of Homburg. This brought an immense crowd of people who have nothing whatsoever to do with such a town as Homburg and are not at all likely to return there. It is true that for a very short while hotel-keepers were able to charge as much as £2 a day for a single bedroom. Indeed, they were so intoxicated with this golden harvest that they wrote to their ordinary visitors, from whom they could not expect such payments, begging them not to come at the time of the race. Many old *habitués* who went every year to Homburg were irritated at being thus disturbed, so they not only avoided the town during the motor race but have never been there since. The exorbitant charges by a certain class of hotel-keepers have also created a general scare and many people who would be glad to frequent Homburg for their health are afraid to do so because of its extravagances. All this has contributed to give the town a bad name which, after all, it does not deserve. This at least the Germans fully appreciate. They go there in ever-increasing numbers. Of course, the Germans give the hotels frequented by the wealthy English and Americans the widest possible berth. Some English families, I am told, have ceased to go to Homburg because they do not care to be in hotels with persons who have more money than manners and make life unpleasant by their ostentatious extravagances. All this glitter of gold disturbs the mental equilibrium of the hotel-keepers. They do not realise that the wealthy globe-trotter never remains for long and very rarely returns, and that these are not the sort of customers a town like Homburg should cater for. What was suitable and appropriate in the days of the roulette is now out of place and injurious to the better interests not merely of the town but also of sufferers from all countries. The resources that Homburg offers for the treatment of disease are too precious to allow that people should be frightened away by motor-car sportsmen and multi-millionaires bent on beating the record by the extravagance of their dinners. A reaction has set in. It is now realised that the motor race was a great mistake and seriously injured the town. Efforts are being made to follow the example given at Kissingen and other places where care is taken to provide first of all what is needed by the patients. People will go to Homburg in due proportion to the number of people who, returning from Homburg, are able to say that their health has been improved by following the "cure," that they were able to do this in comfort, and that they were not the victims of extortionate charges.

(To be continued.)

CHOLERA, PLAGUE, AND OTHER DISEASES IN THE NEAR EAST.

(FROM THE BRITISH DELEGATE ON THE OTTOMAN BOARD OF HEALTH.)

THE whole of the Turkish Empire continues, so far as is known, to be free from cholera.

The news from Persia is rather conflicting but the latest information is to the effect that there also cholera is for the present extinct. An undoubted death from the disease seems to have taken place in the Hassanabad quarter of Tehran on May 4th. The patient was an Armenian, aged 60 years, and he presented the classical symptoms of cholera. In the same house that he occupied a Chaldean had fallen sick four days before but he recovered, and on May 7th a boy, aged 12 years, was also treated for an attack apparently of true cholera, but he also recovered. Rumours that the disease existed in Meshed, Kermanshah, Hamadan, and elsewhere, have been contradicted by telegrams from persons on the spot.

A limited outbreak of plague has recently occurred at Adalia, on the southern coast of Asia Minor. The first two cases were reported by a local practitioner on July 15th. When seen that evening by the health officer the following conditions were present. One of the patients was a baker, aged 40 years, and had been ill for six days. There was a bubo in the left groin and mild constitutional disturbance. The other, a youth, aged 16 years, lived in the same house; he had been attacked two days later than the first case. There was a right inguinal bubo and, as in the other case, only mild fever and constitutional disturbance. On the 16th a third case was seen. The patient was a woman, aged 40 years, living in a house close to that occupied by the other two patients. She had fallen ill on July 15th; the symptoms were more severe than in the other cases; the bubo was in the right groin. It is further stated that for some days before she fell ill an unusual mortality among rats had been noted in the house.

On July 17th a fourth case was observed; the patient was employed in the same baker's shop as the first two cases. He was said to have been ill for eight days. For nine days no fresh case was reported but on July 26th it was announced that during the preceding night a young girl, aged 13 years, had been seen presenting a right inguinal bubo and other symptoms of plague. She lived in the same quarter of the town as the other patients. She died the following night. Finally, a sixth case was found dead on August 2nd in a quarter of the town far removed from that where the disease was first observed. It was ascertained that in this case the illness had lasted 12 days but its existence had been purposely hidden from the authorities. Both in this and in the preceding case the presence of the plague bacillus was demonstrated by bacteriological examination. No other cases have since occurred.

On July 17th an imported case of plague was observed in the Beirut lazaret. The patient was a sailor from the Messageries steamer *Niger*. This vessel had touched at Alexandria (probably on the 12th), at Port Said on the 13th, and arrived at Beirut on the 15th. There ship and passengers were subjected to five days' quarantine. The passengers numbered 365 and the crew 90. On examination the patient was found to have very slight fever and headache and a bubo in the left groin. He stated that he had not been ashore either in Alexandria or Port Said and that the bubo had appeared four days before. As early as the 12th, when the ship was leaving Alexandria, he had consulted the ship's surgeon for lassitude and loss of appetite; but he escaped notice at the "medical visit" on arrival at Beirut. Bacteriological examination of the contents of the bubo (made by the French Medical School at Beirut) gave positive results. The ship was allowed to leave *en contumace* after disinfection and the passengers were subjected to ten days' quarantine in the lazaret.

Details have now been received of the two cases of plague which occurred on the Persian steamer *Persepolis* at Bushire in the Persian Gulf (as mentioned in my last letter[1]). This ship had left Bombay on May 6th; she touched at Bunder Abbas on the 12th and reached Bushire on the 15th. Both patients were sailors; they had been for several weeks in Bombay, where they had been constantly ashore; one, it

[1] THE LANCET, July 8th, 1905, p. 115.

seems, had developed a bubo on May 12th and the other on the 13th. Both had landed in Bushire on the 16th and passed the night on shore with their families; on the next day (the 17th) both sought medical advice and were then found to present symptoms of plague. The cases were, however, of an exceedingly mild character and almost apyretic throughout. Both were inoculated with serum from Paris and both recovered. A microscopic examination of the bubo contents showed the presence of bacilli resembling those of plague. All the officers, crew, and passengers on board the vessel—some 85 persons in all—were offered and accepted prophylactic inoculation.

The outbreak of plague in the Bahrein Islands in the Persian Gulf came to an end some time early in July but the exact date of the last case has not yet been made known.

An outbreak of suspected plague is reported from the Yemen province of Arabia. A telegram from Hodeidah dated July 22nd stated that a disease resembling plague had appeared at Nadera, Yerim, and Zimar and this has been confirmed by later telegrams. The health officer of Hodeidah has been instructed to visit these places and report on the outbreak. At present this seems to be a limited one but in view of the disturbed state of this province and the military operations there there is an obvious possibility of its serious extension.

Finally, on July 18th news was received of the reappearance of plague among the Beni-Sheir, in the Assyr province, where one of the well-known centres of endemic plague exists. No details have as yet been received.

Rumours have been current of the existence of cholera in Russia and on June 14th (presumably Old Style) a case of "suspected cholera" was officially reported to have occurred at Radom, in Polish Russia. Other suspected cases had also been observed at Tula and in places on the upper reaches of the Don. Recently, however, the Russian Plague Commission has officially declared that no case of cholera has occurred in the Russian empire since April 21st (presumably Old Style) and that suspected cases reported from Lodz, Tula, the Ardatof district, Vilna, Tomsk, Razan, Radom, and Petrovsk have been shown by bacteriological examination not to have been cases of true cholera.

Constantinople, August 14th, 1905.

THE EARTHQUAKE IN THE PUNJAB.

A NARRATIVE BY A MEDICAL SURVIVOR.

THIS is in continuation of my letter of April 19th[1] on the subject of the earthquake, as time now allows us to see the issue of the injuries received. Five British officers had subsequently to be invalided home as the result of their injuries; two of them were sent off very soon after the catastrophe. They both have fairly severe scalp wounds and general contusions but the most marked symptoms were those of nervous prostration or neurasthenia resembling those met with after railway collisions. They were also suffering from severe mental shock from losing near relatives. A British officer suffering from compression of the brain and probable fracture of the internal table of the skull did remarkably well and was able to proceed home on June 22nd last. Two others invalided were cases of scalp wounds and fracture of the ramus of the lower jaw respectively. Both of them received severe general contusions also. Many Europeans who survived the catastrophe, having been bruised in the débris and received severe general contusions and shock, suffered much afterwards from weakness of the nervous system which was exaggerated by the frequent minor earthquake shocks which subsequently occurred, uncertainty being engendered as to the occurrence of another severe earthquake. The terror of the catastrophe and the events following were enough to unnerve the strongest. In the case of a lady with simple fracture of the left thigh a patch of gangrene occurred on the right foot due to direct killing of the tissues by the falling débris. It was a deep, well-defined, triangular patch which threatened to spread rapidly at first but eventually did very well under continuous hot iodine baths.

All the Gurkha officers did well, but the rank and five were not so fortunate. Three fracture-dislocation cases of the spine terminated fatally. They were all in the dorso-lumbar region with immediate paralysis of all parts below the seat of fracture, loss of power being associated with loss of sensation. The anæsthesia in two of the cases did not involve the whole of the palsied area as in one of them its upper limit was considerably lower than that of the palsy and in the other it was somewhat patchy in its distribution. There was complete retention of urine immediately after the injury followed by incontinence. There was also fæcal incontinence. The case mentioned in my previous letter as having developed tubercle of the lung was before its onset the most promising of the three. The affection, however, was of a very acute form to which the man rapidly succumbed. In the other two cases the direct cause of death was evidently kidney disorganisation from secondary trophic disturbance. The two cases of dislocation of the spine and two cases of partial dislocation of the same showed very minor pressure symptoms and did very well. The cases of injury of the pericardium and heart also did well. The two cases that developed tetanus were those of severe crushing, lacerated wounds of the lower extremities caused by the falling débris of the barracks. They both terminated fatally in spite of the administration of antitetanic serum. All the other compound fractures and crushing wound cases that were given prophylactic doses of antitetanic serum did not develop tetanus. The case of fracture of the ribs with surgical emphysema which was subsequently complicated by pneumonia and pleurisy did remarkably well. He also had a fractured clavicle. The two other cases of fractured ribs complicated with wound of the lung also did well. All the cases of simple fracture of the thigh did remarkably well with simple horizontal extension treatment. The compound fractures did well under conservative treatment. In two of these the ends of the bone were united by means of silver wire.

Minor shocks have occurred occasionally ever since the earthquake on April 4th but they appear to be now felt more severely in other hill stations. All of us are now living in huts which are mostly constructed of a low brick wall about three feet high surrounded by a mud wall about four feet high with a wooden roof covered with corrugated iron sheets. These huts are probably earthquake-proof, though they make a rather alarming noise when a shock occurs.

We have had most extraordinary climatic conditions this year. The winter was an exceedingly severe one, such as has not been known for about 30 years, and continued almost up to the time of the earthquake when we suddenly jumped into summer weather. So far we have had very little of the regular steady rain we usually get at this time of year, only a very small fraction of the usual 100 to 130 inches that should have fallen, but we have had many thunderstorms.

Dharmsala, August 2nd.

[1] THE LANCET, May 13th, 1905, p. 1290.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Birmingham Housing Committee.

A DEPUTATION of the above committee, including the medical officer of health, has recently visited Germany to inquire into the methods of town extension which are in vogue there and which are efficacious in preventing overcrowding. The towns visited included Berlin, Stuttgart, Ulm, Frankfort, Mannheim, Nuremberg, Cologne, and Dusseldorf. The deputation was cordially received by the public officials of the different towns and has returned impressed with the great interest, as compared with England, which the leading townspeople take in their fellow citizens. The deputation was also struck with the cleanliness of the towns and with the large area which they cover. The information acquired by the deputation will form the subject of a special report to the general committee, which will consider it and probably report upon it to the city council at the meeting in October.

Milk-blended Butter.

Three samples of the above food have lately been analysed by the Birmingham public analyst and were found to contain from 26·2 to 30 5 per cent. of water and from 0·66 to 0 98 per cent. of boric preservative. The quantities of both boric preservative and of water were considered objectionably large, but as the food is sold under a fancy name it could

not be certified as adulterated. At the present time there is no authorised or accepted standard for the composition of "milk-blended butter" and therefore it is impossible to certify that it is not of the "nature, substance, and quality of the article demanded by the purchaser."

Hospital News.

The annual report of the West Bromwich District Hospital shows an increase in the number of patients during the past year. In spite of this the committee is able to report that the deficiency from last year has been reduced from £411 to £392 and that it has transferred £200 to the endowment fund.—At the quarterly meeting of the general committee of the Walsall and District Hospital an equally satisfactory financial statement was made although the subscriptions show a slight falling off attributable to the bad trade in the town.—Departing from their rule heretofore, the Aston guardians have appointed a lady to the post of junior medical officer to the workhouse infirmary. The successful candidate is Dr. Catherine Frazer who has gained experience at the West Riding Asylum and other institutions.

Health of Birmingham and District.

The medical officer of health has just issued his quarterly report in which he points out that both the birth-rate and the death-rate are the lowest on record, the former being 29 per 1000 and the latter 15·7 per 1000. The very low death-rate is attributed to the comparative absence of epidemic disease. 24 cases of small-pox were notified during the quarter and 374 cases of scarlet fever. Phthisis was accountable for 216 deaths and other forms of tuberculosis for 69 deaths, so that altogether one out of every seven deaths registered during the quarter was due to the infection of tuberculosis. The number of cases of consumption notified under the scheme of voluntary notification was 206 and the medical officer expresses the opinion that in time this number will be considerably increased when medical men and patients appreciate what the health committee is prepared to do in the way of removing infective matter and giving directions for preventing the further spread of the infection. Although no fresh case of small-pox has been notified during the last three weeks, there has been one death from that disease. The small-pox wards of the hospital are now empty. From the annual report of the medical officer of health of Shropshire I gather that the birth-rate during last year was 26·4 per 1000. The birth-rate in the county is consistently below that of the whole of England and Wales, a fact which the medical officer attributes entirely to the difference in age distribution of the population. The death-rate, 15·7 per 1000, shows a slight increase on the three preceding years. This seems to have been partly due to the prevalence of measles and whooping-cough. The latter complaint caused 89 deaths, all of children under five years of age, and there can be no doubt, according to the medical officer, that exclusion of children under five years of age from school would be followed by a diminished mortality from whooping-cough. There was a slight increase in the amount of phthisis throughout the county and it was almost entirely in the urban districts.

Workhouse Accommodation.

The question of accommodating the large number of applicants in the Birmingham workhouse is just now seriously engaging the attention of the board of guardians. It is expected that during the coming winter great demands will be made upon the accommodation. It was so last year, despite the fact that 100 men were boarded out at Risbridge. Several advocate the building of a new workhouse and even go so far as to say that it would actually pay the ratepayers to do so. They point out that the present site, a very valuable one, could be sold or leased and in that way it would bring a good return. Further, there would be a big saving in the management, for at present the buildings of the workhouse are scattered and an enormous staff is rendered necessary. Of the schemes for more temporarily relieving the existing pressure the one which seems to be regarded with most favour is the provision of a home for the "ins and outs." It is claimed that in addition to its affording accommodation for more adults it will release the children from workhouse associations. A scheme for the purchase of a site for such a home was recently brought forward but was defeated largely on the ground that no expert valuation of the site had been obtained. Other premises which are considered suitable have again been found and it is probable that the question of their purchase will be brought before the guardians at their next meeting. A joint committee of the Newcastle-under-Lyme, Stoke-on-Trent, Wolstanton and Burslem, Stone, Leek, and Congleton unions has lately been engaged in considering what can be done for the unemployed in view of the coming winter. By formal resolution the committee recommends the guardians to adopt a somewhat similar scheme to that of the Salvation Army Farm Colony, Hadleigh, and of the guardians of the Poplar union, Laindon, expressing the opinion that it is the wisest solution of this difficult question. A county like Stafford is believed to be particularly suited for a farm colony and it is thought that eventually such a farm would be self-supporting.

A Water Famine in the Potteries.

Newcastle-under-Lyme and some of the Potteries towns were a few days ago suddenly deprived of their water-supply by the bursting of a trunk main from the Hatton reservoir at Trentham. The inconvenience caused was great; rain-water had to be used for drinking and domestic purposes, though many found it impossible even to obtain that. Thousands assembled in the streets with vessels of every description trying to obtain water which was brought into the towns in barrels from country springs and sold at good prices. Happily the main was quickly repaired and the water was turned on again.

August 22nd.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Typhoid Fever at Bridgend.

IN a report to the Bridgend (Glamorganshire) urban district council the medical officer of health (Mr. Wyndham Randall) gives a very complete and detailed account of the circumstances attending the recent epidemic of typhoid fever in the town, where there is a population of about 7000 persons. Typhoid fever is rarely absent from Bridgend and in the first quarter of the present year 12 cases occurred. Not a single case, however, was reported during the whole of April or until the middle of May when the epidemic began. Up to the end of July, when the outbreak was practically over, 90 persons were attacked and ten died. The highest number of cases notified weekly were in the second, third, fourth, and fifth weeks of the outbreak, the numbers being respectively 15, 11, 13, and 19. The 90 patients resided in 73 houses. In 12 houses there were two cases, in one three cases, and in one four cases. Mr. Randall discusses at some length the possible causes of the epidemic. There was no evidence of the milk-supplies or of shellfish acting as the medium of infection, and there was no special preponderance of cases among those persons who lived in houses built on gravel or among those who had recently come to reside in the town. There appears to have been an opinion, held locally, that the river gravel which had been used as binding for some of the roads was the initial cause of the epidemic, but as only 16 cases occurred in streets where this substance had been used this hypothesis is negatived. The water-supply of the town is derived from springs which issue from the carboniferous limestone at the base of a hill and on the bank of a mill-race. The water issues from these springs at considerable pressure and is collected in a natural rocky basin, from which it is pumped to the town and filtered through sand before entering the mains. It has been suggested that after a period of dry weather this natural reservoir, or the springs supplying it, may have the general level of their underground water so lowered as to be below the level of an incoming spring tide and specific pollution may arise from the damming back of the river water. It appears, also, that during the first fortnight of May it was found necessary for some purpose or another to turn some of the town sewage directly into the river and the same thing was done later in the month. An examination of the public water-supply taken on June 6th revealed the presence of the bacillus coli communis. Mr. Randall does not seem to think that this sewage pollution of the river could have been entirely responsible for the outbreak from the fact that the first person attacked must have been infected some time before the date in May when the sewage first entered the river. He expressed the opinion,

when the epidemic was at its height, that it might be due to the excessive dryness of the early months of the year indirectly leading in some way to the specific pollution of food, and he now points out that this opinion is strengthened by the cessation of the outbreak after the June rainfall.

Bacteriological Diagnosis in Gloucestershire.

Acting upon the advice of the county medical officer of health (Dr. J. Middleton Martin) the Gloucestershire county council at the beginning of 1904 made arrangements with Professor Stanley Kent of University College, Bristol, to undertake at the cost of the council the bacteriological examination of specimens sent up by medical officers of health in the county. This arrangement allowed of examinations being made in the case of "suspects" or persons suspected of having the disease, of "contacts" or persons who had been in contact with a patient suffering from the disease, and of "controls" or persons at the termination of an attack in order to establish freedom from infection. During the year 1904 there were examined for diphtheria 243 specimens of which 96 gave positive results; 39 for typhoid fever, of which 17 reacted; and 18 for tubercle, in six of which the bacillus was found.

The Medical Officer of Health of Chipping Sodbury.

At the meeting of the Chipping Sodbury rural district council, held on August 8th, it was stated that the Home Office had applied for the report of their medical officer of health. It was decided to inform that authority that the council were still awaiting the sanction of the Local Government Board to their nominee and also to refer them to the last report issued by Dr. F. T. Bond.

Taunton Eye Infirmary.

The Taunton Eye Infirmary has just been sold by auction for the small sum of £165. The institution was founded by the late Dr. Billett in 1854 and work was carried on by voluntary subscriptions and with the assistance of an endowment until quite recently, when it was decided, by the surviving trustee, to place the matter in the hands of the Charity Commissioners. This authority formulated a scheme whereby the property should be sold and the proceeds (after paying necessary expenses), together with the endowment, should be applied for the benefit of the Taunton and Somerset Hospital.

August 21st.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Juvenile Smoking.

THE subject of "juvenile smoking" has recently been under discussion at meetings of the town council and school board of Glasgow, and signs are not wanting that the verdict may be suppression by the police. Special inquiries conducted by the headmasters and teachers in a few of the largest schools revealed the fact that the pupils with the dullest intellects were the habitual smokers. In one class alone it was found, according to evidence and the boys' own admissions, that there were four lads who simply could not give up the smoking of cigarettes. In connexion with this subject interesting information has been collected by the secretary of the Scottish Anti-Tobacco Society relative to American and European legislation bearing on the use of tobacco in children. Inquiries were also made in our colonies and in Japan. The information has been procured from official sources, chiefly from the embassies of the various countries or British consuls. In the United States of America the use of tobacco is prohibited to children under a certain age and the evils of its use are taught in the State common schools. The total American population in 1901 was 76,358,501 and there were under anti-tobacco prohibition laws 65,898,069. The colonial returns show that in Tasmania the prohibition applies to children of and under 13 years, and in Prince Edward Island, New Brunswick, North-West Territory, British Columbia, and Cape Town the age is 16 years and under. Recently legislation has been adopted in the Channel Islands and the Isle of Man making the age 14 years and under. In answer to a letter making inquiries, Viscount Hayashi, the Japanese Ambassador, states that in Japan persons under 20 years are prohibited from smoking, and that if the parents or guardians of a youth permit him to smoke they are fined and the tobacco dealers who sell smoking appliances or tobacco to youths are fined. H.M. Consul at Constantinople, Mr. C. A. Ayres, writes that in Turkey there is no law prohibiting the use of tobacco by youths under a certain age. In Norway the law enables municipal authorities, if they wish, to pass by-laws forbidding the sale of tobacco to children under 15 years, but H.M. Consul at Christiania writes that he knows of no case in Norway where the local authorities have passed such by-laws. In Belgium there are no regulations of any kind, State or otherwise, prohibiting youths from smoking or in any way limiting the age. In Austria boys attending the lower classes in all schools, civil and military, are prohibited, but there are no laws to enforce that prohibition, merely disciplinary regulations. In Germany rules are laid down in the chief military college restricting smoking by under officers, while cadets are not allowed to smoke at all. In France no police regulations exist interdicting children from smoking; and in Spain, while there is an absence of restrictions, smoking is not much practised among the lower classes by youths under 15 years. In Russia the pupils of public schools are not allowed to smoke in the school premises or in the streets and public places, and smoking is forbidden to the pupils of all military schools while the pupils are still of tender age. With regard to Italy, the British Consul at Rome states that tobacco is a State monopoly; that in naval and military colleges smoking is allowed in recreation hours, the pipe, however, being prohibited; that smoking is not allowed in schools, but that there are no regulations for universities and seminaries. In Portugal smoking is a punishable offence on board the training ships for naval petty officers, as well as in the case of military cadets of tender age. Cigarette smoking, however, is almost universal in Portugal with all ages and classes.

A Novel Claim.

It occasionally occurs that a claim for compensation is made by a patient in a case of asserted malpraxis when our sympathy with the medical man does not prevent us from understanding the methods of reasoning which have led the patient to believe in the justice of his claim. But a claim which has just been made in all seriousness against the Blairgowrie town council is absolutely unrivalled for its lack of logical basis. The claimant was formerly a public official in Blairgowrie and he demands from the town council £2320, being at the rate of £80 per annum since 1876, in consequence of blindness alleged to be due to the treatment of a medical gentleman, now deceased, who was at that time chief magistrate of the burgh.

August 22nd.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Richmond District Asylum.

AT the monthly meeting of the joint committee of management of the Richmond District Asylum held on August 17th a report was read from the visiting committee of the Portrane institution dealing with the possibility of a water famine. The report stated that the situation with regard to the water-supply to Portrane Asylum had become serious. Alderman M'Carthy, the chairman, added, however, that the present crisis would be only a temporary one and could never occur again, as long before next summer they would have the main and the new reservoir in full operation with a storage of twenty million gallons. Dr. J. O'C. Donelan said that they were pretty safe so far as the general supply for this season was concerned. The months of September and October have always been full of peril, but instructions have now been issued for the strictest supervision in order to economise so far as possible the present available supply.

Medical Officer to the Rathdown Union.

At the last meeting of the guardians of the Rathdown union Dr. D. J. Roantree of Sligo was elected by a large majority.

Infantile Mortality in Belfast.

Dr. C. J. Clibborn, medical inspector of the Local Government Board, attended at a meeting of the Belfast public health committee on August 17th and suggested the desirability of issuing instructions regarding the feeding of infants owing to the high death-rate from a preventable disease—diarrhœa. The necessary instructions were given to the medical superintendent officer of health to do this and steps have also been taken to obtain information from

the registrars of burying grounds as to the deaths of children under five years of age; and one of the lady sanitary officers has been appointed to visit the houses of parents, that she may make inquiries and give advice.

Cases of Poisoning at Ballymena.

Some 18 children in Ballymena were dangerously ill last week from swallowing the contents of the pods of laburnum trees which resembled small peas. There was a good deal of vomiting but emetics were efficient in most of the cases, some only needing the stomach pump. All fortunately recovered.

Dispensary Medical Officers.

Mr. H. Reid, medical officer of No. 2 (Montaight) Lurgan district, applied again last week for a month's holiday and nominated Dr. J. A. Corbitt of Portadown as his locumtenent at four guineas weekly as he could get no one to do the work for three guineas, which the guardians offered. The board declined to alter their previous resolution and told Mr. Reid he could pay the extra guinea himself.

Water Famine in Londonderry.

At the present time Londonderry is suffering from a dearth of water. It is reported that the reservoirs at the waterside are empty and that the largest manufactory has been compelled to cease work for want of water. At the asylum at Gransha (where there are a large number of patients) the corporation was called on to fill the tanks, as it was bound to do by deed, but it had no water, and the same applied to the military barracks at Ebrington. Fortunately, the regiment usually quartered there is at present under canvas at Magilligan but unless the civic authorities can guarantee water (which at present they are unable to do) the soldiers will not be brought back to the city. At the monthly meeting of the corporation of Londonderry, held on August 17th, it was resolved to refer the matter to a committee, which will be instructed to send a deputation to the Local Government Board. The committee will also consider the advisability of appointing an engineer with experience in water schemes to prepare a report as to the advisability of the work that is proposed, which, the Board observes, is now estimated to cost £20,200 instead of £12,000, the sum which was formerly mentioned. As a temporary expedient a steam pump has been hitched to the engine of the city steam roller and by this means the corporation is pumping water into waterside supply tanks from a pipe laid across Carlisle bridge connecting with the main supply at Killea.

Maternity Nursing in Londonderry.

At the present moment in Londonderry there is only one midwife for the two dispensary districts. She was appointed in 1881 and is now over 70 years of age and during the past year she attended 253 maternity cases. Though active and energetic, Dr. B. McCarthy, Local Government Board medical inspector, reports that she was overwhelmed with work and was quite unable to give the necessary time and attention to the cases. As a result "handy" women were much in evidence and in consequence the lives of several poor women had been endangered. Since the appointment of the present midwife the population of Londonderry has increased by nearly 11,000 and last year 5728 dispensary patients were treated. Dr. McCarthy recommends the appointment of a second midwife and the two dispensary medical officers also request the same. The board of guardians decided unanimously at their meeting on August 19th to appoint an additional midwife.

Insanitary Places in the North of Ireland.

Attention is being drawn at present to several insanitary places in Ulster. Owing to railway communication being opened to the village of Burtonport, in county Donegal, it has become an important centre for the fishing industry, but Dr. B. McCarthy reports that there is no proper water-supply and that a serious nuisance is caused in the harbour by the presence of decaying dog-fish. The rural council of Glenties has decided to have the harbour cleaned out and looked after. Dr. C. J. Clibborn reports in reference to the thriving town of Lisburn, near Belfast, that there is no systematic inspection of the meat- and milk-supplies, that the water-supply of Magheraleave is insufficient, and that the sewerage of the village of Dunmurry is in a most defective condition, while the Infectious Diseases (Notification and Prevention) Acts have not been adopted. With reference to the necessity for a proposed sewerage scheme in Poyntzpass (county Armagh) the committee appointed by the district council to inspect the place reports that, in its opinion, if the existing sewers are properly attended to no urgent necessity exists for recommending any special scheme which would be attended with expenditure.

August 22nd.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Destruction of Mosquitoes.

AT the recent meeting of the French congress of climatic treatment and hygiene of towns Dr. Hérard of Besse said that the mosquitoes found in the Mediterranean health resorts belonged to the genus culex and were not dangerous in the same degree as those belonging to the genus anopheles which conveyed malaria. These mosquitoes ought, however, to be destroyed because in the first place there was no certainty that an anopheles might not sometimes be present and in the second place their bites were disagreeable, especially for patients who were undergoing open-air treatment both by night and day. Mosquito curtains were no more than a palliative; wire gauze over the window openings was better, but the best plan, as shown by the American experience in Cuba, was to destroy the insects. The municipality of Beaulieu has endeavoured to accomplish this by pouring petroleum and antiseptics into the syphon of the sewer outlets and on the open drains leading from manure heaps, by cleansing the street fountains, and by prohibiting the collection of water in basins or ponds unless they either contain fish or are covered with a film of petroleum.

Intermittent Hemiplegia of Albuminuric Origin.

At the fifteenth congress of French-speaking alienists and neurologists held at Rennes from August 1st to the 7th M. Manheimer-Gommès mentioned the case of a girl, now aged eight years, who had an attack of scarlet fever at three years of age but remained in good health since that time until she was suddenly seized with paralysis (monoplegia) of the left arm. This passed off but returned some months afterwards and again passed off. The urine contained albumin during each paralytic attack but not any during the invervals. The first attack was said to have been due to the girl when at school having too long resisted the desire to empty her bladder. There would seem to have been cerebral œdema in the case. The transient paralysis of patients suffering from uræmia or simple albuminuria without any trace of general ill health, as in the case of the present patient, ought, in the opinion of M. Manheimer-Gommès, to be attributed to passive congestion of mechanical origin favoured by dyscrasia of the blood.

Nosological Affinities of Hydrophobia.

At the same congress M. Pierret said that perversions of sensibility were directly or indirectly the foundation of all varieties of delirium. It would therefore be very desirable to ascertain whether in certain well-defined cases such phenomena as delusions and hallucinations could be referred to real lesions of the sensory neurons at all parts of the centripetal system. Hydrophobia was the only communicable (*infectieuse*) disease which by its primary localisation in the centripetal system afforded in typical cases an opportunity of observing the progressive development of symptoms which were at first exclusively sensitivo-sensorial and afterwards sensitivo-psychomotor. This very suggestive point of view was used for the first time by M. Pierret in his lectures delivered in 1886-87 and by his pupil Dr. Ricaux in his thesis presented in 1888. M. Dide replied that he was in perfect agreement with M. Pierret on the subject of the toxi-infectious origin of hallucinations, but on pathogenic grounds he thought that there was reason for distinguishing the cases in which the hallucination was primarily of cortical origin. In its clinical relations the toxi-infectious hallucination seemed to be more complex and often assumed a psychomotor or psycho-inhibiting character.

Oxygen in the Treatment of Epileptic Fits.

Being hurriedly sent for to attend a man, 50 years of age, who had been for 30 years an inmate of a lunatic asylum, M. Sizaret found that he was liable to epileptic fits and was now threatened with imminent asphyxia in the course of an attack, although he was lying down with the tight parts of his clothing fully loosened. His face was purple, his mouth and nose were full of frothy saliva, his eyes were glassy, his pulse was irregular, and his extremities were cold. M. Sizaret

immediately sent for a bag of oxygen and placed the mouthpiece between the patient's lips. Almost as soon as the stopcock was opened and respiration simulated by intermittently pressing the bag, the patient came to himself, his eyes lost their deathlike appearance, and he sat up; being demented and having a propensity to violence he also endeavoured to strike those who were near him. Venesection would have been desirable but could not be performed on account of his struggling and resistance. The epileptic fit soon passed off and did not recur. After this trial of oxygen M. Sizaret was induced to employ inhalations of the gas in the treatment of an idiot boy, 13 years of age, who had been in the asylum for four years; he was subject to epileptic fits, which sometimes continued with hardly any interval and might be as frequent as 200 per month. Under this treatment the fits soon ceased, the patient became calm and his general health, which had been very weak, improved slightly. Several female patients also received inhalations of oxygen when fits were impending and in all cases the results were very encouraging. M. Sizaret read a paper on this subject at the above-mentioned congress of alienists and neurologists.

The Competitive Examinations for the Position of Interne.

It was announced some time ago that the reform of the competitive examinations for the post of interne (*concours de l'internat*) would commence during the present year but this will not be so, for the physicians and surgeons have not been able to agree with respect to the modifications proposed. The Société Médicale des Hôpitaux, at a private meeting, admitted the principle of unsigned papers, but no idea has been formed either as to how this anonymity is to be secured or as to who will read the papers. The society did not approve of any of the methods proposed and referred the whole question to the committee who will therefore have to go over the ground again.

Hospitals for Natives in Cambodia.

The authorities at Cambodia in French Indo-China have decided to establish at Pnom-Penh a general hospital and a lying-in hospital for natives. The work of construction will be commenced immediately.

Small-pox.

The slight outbreak of small-pox which recently occurred within a limited area in Paris is now quite at an end.

August 21st.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

Illness of the Italian Premier.

His Excellency Signor Fortis, the able and energetic head of the Italian Government, has since the beginning of the month been rather seriously indisposed. Epistaxis has recurred so steadily and always coincidently with his resumption of official duty that he has had to be removed from Rome to the Tuscan Apennines and is at the present moment under treatment at Vallombrosa in the house of the Inspector of the School of Forestry. So violent as well as sudden has been the nasal hæmorrhage that Dr. Imperatori has had to be constantly within immediate call, while his assistant spends the night in his Excellency's sleeping apartment, ready to renew the *tamponi* (plugs) whenever required. A slight improvement in his condition admitted of his seeing the Minister of Foreign Affairs (Signor Tittoni) who came over in his motor car from Camaldoli to confer with him; but the recurrence of the epistaxis immediately after the interview was such that Professor Grocco, chief consultant of the Tuscan School, was summoned, and after a thorough examination, followed by a protracted consultation with Dr. Imperatori, left the strictest orders that his Excellency should keep his bed with the *tamponi* retained *in situ*, that on no plea or pretext should any visitor or any colleague be admitted, and that all business of whatever kind must be absolutely interdicted. The last bulletin, that of August 17th, was not quite satisfactory, so that Professor Grocco's prescriptions are carried out with, if possible, increased stringency.

The Red Cross and the Autumn Manœuvres.

The Italian army, under the command of His Royal Highness the Duke of Aosta, is being mobilised for the grand manœuvres of the autumn in the Neapolitan territory, Campania being decided on as the actual scene of operations. As is the rule on these occasions the Red Cross turns out in great force, not only for discipline in the regulations imposed on it but for putting to the test whatever innovations or experiments may within the year have occurred to its staff as worthy of being tried. In Rome the other day a "rehearsal" (so to speak) of certain novel features in the instruction department was performed in the neighbourhood of the Colosseum, experiments relating to the "montatura" and the "smontatura" (mounting and dismounting or rather "unshipping") of the hospital in all its sections. 43 soldiers took part in the work and the result was satisfactory enough to suggest it being followed up by other experiments on different levels or positions as well in the hill country as in the plain. With this object 11 mules were added to the transport service so as to accelerate the movement of the *matériel*, which includes ten tents capable of accommodating 12 beds apiece, besides all the *armamentarium medico-chirurgicum et sanitarium*. To the hospital have been annexed two ambulances, contained in 18 packing cases, charged with whatever is requisite for the tendance and relief of the more gravely wounded. This *matériel* comprises three tents for the directing *personnel* with its assistant staff, transportable on six beasts of burden and so equipped as to suffice for 150 *prime medicazioni di ferite gravi* (first treatment of severe cases). The direction of the hospital, I may add, is in the highly competent hands of Captain Quattrocicchi, M.D.

August 19th.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Cure of Leprosy: Experiments at Kasauli.

AN elaborate series of experiments have been conducted at Kasauli during the past half year with the object of proving the claim of Captain E. R. Rost, I.M.S., to have succeeded in cultivating the leprosy bacillus and to have prepared the curative serum leprolin. A detailed report has just been issued. The experiments have been made by Colonel D. Semple, R.A.M.C., director of the Pasteur Institute, with the coöperation of Captain Rost. The report states that Captain Rost agreed that the methods adopted were what he himself wished done to demonstrate his method of cultivating the leprosy bacillus. The experiments were conducted through February, March, and April under every possible condition. The result unfortunately was a total failure. No growth whatever in the media inoculated with leprosy bacilli took place. Colonel Semple is very severe in his remarks. In commenting upon the precautions which should have been taken to exclude errors from contamination he says that had these been adopted "the chances are that the literature from his [Captain Rost's] pen on the subject of the cultivation of leprosy and the preparation of leprolin would never have been published." As the cultivation of the bacillus failed there could be no preparation of leprolin. The following is the summary of Colonel Semple's conclusions: (1) Captain Rost has failed to demonstrate a growth of the leprosy bacillus in his media at Kasauli; (2) the material used to inoculate the media was without doubt taken from leprosy cases and contained leprosy bacilli in large numbers; (3) the leprosy bacillus has not yet been cultivated and the preparation of leprolin is for the present an impossibility; and (4) defective technique in the preparation of his media and in eliminating subsequent contaminating growths are the probable causes which have given rise to Captain Rost's mistakes.

Cholera Epidemic in Madras.

A cholera epidemic is now raging in Madras and has assumed alarming proportions. The death-rate for the whole city is 89 per 1000, while in some of the municipal divisions it is 200 per 1000. Villages in the neighbourhood of Madras are also suffering.

Some Vital Statistics of the Punjab.

The vital statistics relating to the Punjab for 1904 show a lamentable mortality from plague, which alone accounts for a death-rate of 19 per 1000, and the total death-rate for the provinces reached 46 per 1000. It is not generally recognised that plague carries off the flower of the population and not the very young or the aged. The infantile mortality has been affected hardly at all. The Sanitary Commissioner estimates that the population has been reduced by nearly 1½ per cent. since the census of 1901.

Vaccination in Bengal.

The Government resolution reviewing the triennial report on vaccination in Bengal for the years 1902-04 draws attention to the improvements effected in the rural areas but notes the falling off in municipalities, especially in Calcutta, where only one quarter of the infant population was protected by vaccination in 1904-05. A falling off generally requires some explanation but it is obvious that the proportion in Calcutta can never be large so long as the enormously high infantile mortality continues (350 per 1000 births). Very different results seem to be attained in different districts which can only be explained by the varying capacity and energy shown by the staff. A proposal to introduce rewards to vaccinators has been submitted and a scheme for the better training of the vaccinators and inspecting staff is under consideration.

The New General Hospital at Rangoon.

The new General Hospital for Rangoon promises to be a very important building. The site is on that which was formerly occupied by the Agri-Horticultural Garden and Museum and contains about 23 acres. It is central, open, and considered healthy, the soil being good, of hard laterite. Part of the site will be retained for the purpose of building a medical school at some future date. The main hospital building will be 700 feet long and three storeys high. It will provide accommodation for 103 Europeans and 337 natives, or a total of 440 beds. There will be a pauper ward and a private patients' ward. It is proposed to have a separate block for paying patients and space will be reserved for building a separate block for women and children. There is to be a steam laundry with a destructor and disinfecting room. There will be the usual quarters for the staff and provision for about 50 nurses. The object of the scheme is to provide a complete and up-to-date hospital and the general equipment is to be of the most approved patterns.

August 4th.

Obituary.

DAVID McMORDIE, B.A., M.B. R.U.I.

THE death occurred on the evening of August 11th of Dr. David McMordie of Omagh, one of the most promising of the younger practitioners in Ulster. About a fortnight ago he appeared to be suffering from a severe attack of meningitis, but he so completely recovered that the day before his decease he had been assisting some of the local medical men at an operation in the County Tyrone Hospital. At 10 o'clock that night he was quite well but on the next morning he was found unconscious in his bed, and despite all that medical aid could do he passed away in the afternoon at his residence, Holmview, Campsie, Omagh. David McMordie came of an Ulster clan which has given many members to the legal, medical, and clerical professions, and his uncle, the Rev. Dr. W. McMordie, is the present respected Moderator of the Presbyterian Church in Ireland. As a boy David McMordie went to business but being of studious habits he turned towards a professional career and after an excellent preliminary training at the Royal Academical Institution, Belfast, he entered Queen's College, where he had a brilliant career. He was a scholar, an honour graduate in arts and medicine, and one of the most able students of his time at Queen's College, Belfast, and in the Royal University. After his graduation in medicine in 1901 he was for a session demonstrator of anatomy at Queen's College. As a test of his personal popularity and ability we may mention the fact that his fellow students elected him President of the Belfast Medical Students' Association. He was afterwards clinical assistant in the Royal Victoria Hospital, Belfast, and senior assistant house surgeon, ophthalmic house surgeon, and house physician to the Sheffield Royal Hospital, where he gave the greatest satisfaction, and he subsequently made a voyage to India as surgeon to the s.s. *City of Bombay*. A few years since, acting on the advice of those who knew his sterling qualities, he settled down in Omagh, the capital of Tyrone, where he was rapidly succeeding to a large practice. Outside his own profession he was a man of keen literary and scientific tastes, and owing to his influence the old Literary and Scientific Society in Omagh was stimulated, rejuvenated, and established on a good working basis. The profession is all the poorer by the death of Dr. David McMordie, who, apart from his special gifts as a medical man, was a man of the best type of religion and of culture. The funeral took place on August 14th, the remains being conveyed from Omagh to Lisburn and thence to Boardmills in co. Down, where the interment took place in the presence of a large number of Omagh citizens.

EDWARD SHARP, M.R.C.S. ENG., L.S.A., J.P.

Mr. Edward Sharp, the oldest member of the medical profession in Truro, died at his residence there on August 9th in his seventy-first year. He had lately been in failing health and retired from active work a few years ago. He received his professional education in King's College, London, and became qualified as M.R.C.S. Eng. and L.S.A. in 1859. Mr. Sharp had been in practice over 40 years in Truro, where for many years he was medical officer of health, and upon his retirement Dr. Hugh C. Sharp, his son, was appointed to the post. Mr. Sharp was also for many years on the staff of the Royal Cornwall Infirmary and was consulting surgeon to that institution at the time of his death. He was, moreover, on the commission of the peace for Truro. Mr. Sharp was of a kindly and benevolent disposition and will be much missed. He leaves three sons and two daughters to mourn their loss. The funeral, which took place on August 12th, was largely attended.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. Hyernaux, formerly professor of midwifery in the University of Brussels, at the age of 80 years.—Dr. Josef von Metnitz, extraordinary professor of odontology in the University of Vienna, at the age of 43 years.—Dr. Walter Flemming, formerly professor of anatomy in the University of Kiel, at the age of 62 years. His published researches relate to embryology and cell division.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Berlin:* Dr. Heine has been recognised as *privat-docent* of Otology.—*Bologna:* Dr. Canepele of Rome has been recognised as *privat-docent* of Oto-laryngology.—*Breslau:* Dr. Göbel has been recognised as *privat-docent* of Surgery.—*Erlangen:* Dr. Erwin Kreuter has been recognised as *privat-docent* of Surgery.—*Greifswald:* Dr. Sobotta of Würzburg has declined the chair of Anatomy.—*Jena:* A new clinic for Nervous Diseases has been erected in connexion with the psychiatric clinic.—*Pavia:* Dr. Adelchi Negri has been recognised as *privat-docent* of General Pathology.—*Pisa:* Dr. Agostino Bruno has been recognised as *privat-docent* of Internal Pathology.—*Rome:* Dr. Angelo Chiavaro has been recognised as *privat-docent* of Odontology.—*Tübingen:* Dr. Harms has been recognised as *privat docent* of Ophthalmology.—*Vienna:* Dr. Gustav von Wunscheim has been recognised as *privat-docent* of Odontology.

PAUPER NURSING IN WORKHOUSES.—At the meeting of the Bideford (Devon) board of guardians, held on August 15th, a communication was read from the Local Government Board drawing the attention of the guardians to the fact that there were two cases of scarlet fever in their workhouse and that the patients were being "looked after" by an inmate. The Local Government Board considered that a nurse should have been engaged immediately the cases arose and that an inmate should not have been allowed to have charge of the patients. The guardians decided to state in reply that the children were isolated and that a caretaker was looking after them.

NEW HOSPITAL FOR EPILEPTICS AT MOSCOW.—The town council of Moscow, says the *St. Petersburger Medicinische Wochenschrift*, has decided to erect at once an asylum for epileptics for which a special fund of 700,000 roubles is at the council's disposition. The first instalment of the building will accommodate 150 patients.

THE BRIDGWATER INFIRMARY.—As a result of a fête recently held in aid of the funds of the Bridgwater Infirmary the sum of £1200 has been handed to the treasurer of that institution.

THE library of the Sheffield Medico-Chirurgical Society has been transferred from the old Medical School in Leopold-street to the University buildings in Western Bank.

ST. BARTHOLOMEW'S HOSPITAL.—Donations of £500 each have been received by the special appeal committee for the rebuilding fund of St. Bartholomew's Hospital from Mr. George Stimpson and Miss Stimpson, in memory of their father, Mr. George Stimpson.

DELAY IN OPENING THE RUSSIAN WOMEN'S MEDICAL INSTITUTE.—The Women's Medical Institute will not be opened, says the *Novoe Vremya*, before the autumn of 1906.

THE ROYAL SANITARY INSTITUTE.—The council of the Royal Sanitary Institute has accepted an invitation to hold its annual meeting and exhibition at Bristol in July, 1906.

BOOKS, ETC., RECEIVED.

BATSFORD, B. T., 94, High Holborn, London, W.C.
Modern Housing in Town and Country. Illustrated by Examples of Municipal and Other Schemes of Block Dwellings, Tenement Houses, Model Cottages, and Villages; also Plans and Descriptions of the Cheap Cottage Exhibition. By James Cornes, Member of the Leek (Staffs) Town Council. Price 7s. 6d.

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.
The Microtomist's Vade-mecum. A Handbook of the Methods of Microscopic Anatomy. By Arthur Bolles Lee. Sixth edition. Price 15s. net.

HARRISON AND SONS, St. Martin's-lane, W.C.
Reports of the Sleeping Sickness Commission of the Royal Society. No. V. Price not stated.

J. B. LIPPINCOTT COMPANY, Philadelphia and London.
A Nurse's Handbook of Obstetrics, for Use in Training Schools. By Joseph Brown Cooke, M.D., Adjunct Professor of Obstetrics in the New York Polyclinic Medical School and Hospital, Lecturer on Obstetrics to the New York City Training School for Nurses. Second edition, revised. Price 9s. net.
International Clinics. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, U.S.A., with Collaboration. Vol. II. Fifteenth Series, 1905. Price not stated.
Physicians' Edition. Photographic Atlas of the Diseases of the Skin. In Four Volumes. By George Henry Fox, A.M., M.D., Professor of Dermatology, College of Physicians and Surgeons N.Y., Consulting Dermatologist to the Department of Health, New York City. Vol. I. (To be completed in four quarterly volumes, price 25s. net each.)

LONGMANS, GREEN, AND CO., 39, Paternoster-row, E.C.
The Poor and the Land. Being a Report on the Salvation Army Colonies in the United States and at Hadleigh, England, with Scheme of National Land Settlement, and an Introduction by H. Rider Haggard. Author of "Rural England," &c. Price 1s. 6d. in paper and 2s. in cloth.

MACMILLAN AND CO., Limited, London.
Outlines of Physiological Chemistry. By S. P. Beebe, Ph.D., Physiological Chemist to the Huntington Fund for Cancer Research, and B. H. Buxton, M.D., Professor of Experimental Pathology, Cornell Medical College. Price 6s. 6d. net.

NEW SYDENHAM SOCIETY, London. (Agent, H. K. LEWIS, 136, Gower-street, W.C.)
An Atlas of Illustrations of Clinical Medicine, Surgery, and Pathology. Compiled for the New Sydenham Society. (A Continuation of the "Atlas of Pathology.") Fasciculus XXIV. Being XVI. of The Clinical Atlas. Bromide Eruptions, Lichen Urticatus and Pemphigus Vegetans. Price to non-subscribers, half-a-guinea.

REBMAN, LIMITED, 129, Shaftesbury-avenue, W.C.
A Manual of Clinical Chemistry, Microscopy and Bacteriology. By Dr. M. Klopstock and Dr. A. Kowarsky of Berlin. Translated by Thew Wright, M.D. Price 8s. net.

SAUNDERS, W. B., AND CO., 9, Henrietta-street, Covent Garden, W.C.
Dietetics for Nurses. By Julius Friedenwald, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore, and John Ruhräh, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Price 6s. 6d. net.
A Text-book on the Practice of Gynecology. For Practitioners and Students. By William Easterly Ashton, M.D., LL.D., Fellow of the American Gynecological Society, Professor of Gynecology in the Medico Chirurgical College, and Gynecologist to the Medico-Chirurgical Hospital, Philadelphia. With 1046 new line drawings illustrating the text by John V. Alteneder. Price 27s. 6d. net.
Atlas and Text-book of Topographic and Applied Anatomy. By Oskar Schultze, Professor of Applied Anatomy in Würzburg. Edited, with additions, by George D. Stewart, M.D., Professor of Anatomy and Clinical Surgery in the University and Bellevue Hospital Medical College, New York. Price 25s. net.
Human Physiology. Prepared with Special Reference to Students of Medicine. By Joseph Howard Raymond, A.M., M.D., Professor of Physiology and Hygiene in the Long Island College Hospital, New York City. Third edition, thoroughly revised. Price 15s. net.
Malaria, Influenza, and Dengue. By Dr. Julius Mannaberg, Professor of Internal Medicine University of Vienna, and Dr. O. Leichtenstern, formerly of the University of Cologne. Edited, with additions, by Major Ronald Ross, F.R.C.S., F.R.S., C.B., Professor of Tropical Medicine, University of Liverpool; J. W. W. Stephens, M.D., D.P.H., Walter Myers Lecturer in Tropical Medicine, University of Liverpool; and Albert S. Grünbaum, M.D., F.R.C.P., Professor of Experimental Medicine, University of Liverpool. Authorised translation from the German, under the editorial supervision of Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Price 21s. net.

SCIENTIFIC PRESS, LIMITED, 28 and 29, Southampton-street, Strand, W.C.
Simple Sanitation. The Practical Application of the Laws of Health to Small Dwellings. By M. Loane. With an Introductory Chapter on Sanitary Legislation. By Dr. A. Mearns Fraser, Medical Officer of Health, Portsmouth. Price 1s. net.
A Practical Guide to Cookery in West Africa and the Tropics. By Sister Cockburn, late Colonial Nursing Service, Sierra Leone, West Africa. Price 3s. net.

SPON, E. AND F. N., LIMITED, 57, Haymarket, London.
An Introduction to the Study of Colour Phenomena, explaining a new theory of colour based entirely on experimental facts, with applications to scientific and industrial investigations. By Joseph W. Lovibond. Illustrated by diagrams and plates, coloured by hand. Price 5s. net.

VIGOT FRÈRES, 23, Place de l'École de Médecine, Paris.
Traité de Pathologie Interne. Par G. Lemoine, Professeur de Clinique Médicale à la Faculté de Médecine et de Pharmacie de Lille. 2 volumes. Price Fr.16.
L'Acide Formique et la Force Musculaire. Par le Docteur Clément, de Lyon. Price Fr 3.

WRIGHT, JOHN, AND CO., Bristol. (SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED, London.)
Drink Restriction (Thirst Cures) Particularly in Obesity: Being Part VI. of Several Clinical Treatises on the Pathology and Therapy of Disorders of Metabolism and Nutrition. By Prof. Dr. Carl von Noorden, Physician-in-Chief to the City Hospital, Frankfort-on-Main, and Dr. Hugo Salomon. Authorised Translation under the direction of Boardman Reed, M.D. Price 3s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

COOKE, THOMAS, L.R.C.P. Edin., M.R.C.S. Eng., has been re-appointed Medical Officer of Health for the Hurst Urban District Council.
KIDD, MARY, M.B. Lond., has been appointed Junior Resident Medical Officer to the Canning Town Medical Mission, London, E.
SKRIMSHIRE, C. P., M.R.C.S. Eng., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Blaenavon District of the county of Monmouth.
THOMPSON, ALEXANDER DEY, M.B., Ch.B. Glasg., has been appointed Senior Assistant Medical Officer to the Monmouthshire Asylum, Abergavenny.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BATH, ROYAL UNITED HOSPITAL.—House Surgeon. Salary £80 per annum, with board, lodging, and washing.
BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Assistant Medical Officer for six months. Salary at rate of £75 a year, with board, lodging and washing.
BRIGHTON THROAT AND EAR HOSPITAL, Church-street, Queen's-road.—Non-resident House Surgeon for six months, renewable. Salary at rate of £75 per annum.
BRISTOL EYE HOSPITAL.—House Surgeon. Salary £80, with board and residence.
CAIRO. KASR-EL-AINY HOSPITAL.—Resident Medical Officer. Salary £250 (Egyptian), with light and quarters.
CAMBRIDGE. ADDENBROOKE'S HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £30 per annum, with board, residence, and laundry.
CARDIFF INFIRMARY.—Resident Medical Officer. Salary £120 per annum, with board, washing, and apartments.
CARLISLE, CUMBERLAND INFIRMARY.—Resident Medical Officer. Salary at rate of £80 per annum, with board, lodging, and washing.
COVENTRY AND WARWICKSHIRE HOSPITAL.—Junior House Surgeon for six months, renewable. Salary £60 per annum, with rooms, board, washing, and attendance.
DUDLEY, THE GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £100 per annum, with board, residence, attendance, and washing.
DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £25 per annum, with board and washing.
EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon for six months. Honorarium of £25, with board, residence, &c.
HAMPSTEAD GENERAL HOSPITAL.—Resident Medical Officer. Salary £120 per annum, with allowance for rooms.
HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale.—Resident Medical Officer for six months. Salary at rate of £50 a year, with board and washing.

ISLE OF MAN, NOBLE'S HOSPITAL AND DISPENSARY, Douglas.—Resident House Surgeon, unmarried. Salary £90 a year, with board and washing.

LANCASTER COUNTY LUNATIC ASYLUM.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, lodging, and washing.

LEICESTER INFIRMARY.—Assistant House Physician for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

LISTER INSTITUTE OF PREVENTIVE MEDICINE.—Studentship. Value £150, tenable for one year, but renewable.

LIVERPOOL STANLEY HOSPITAL.—House Surgeon. Salary £60 per annum, with board, residence, and washing.

MANCHESTER, ANCOATS HOSPITAL.—Resident House Physician. Salary £80 per annum, with board, residence, &c.

METROPOLITAN WATER BOARD.—Senior Chemical Assistant. Salary £300. Also Senior Bacteriological Assistant. Salary £300. Also Junior Chemical Assistant. Salary £175. Also Junior Bacteriological Assistant. Salary £175. Also Two Laboratory Assistants. Salary £75 each.

MELBOURNE, UNIVERSITY OF.—Professor of Anatomy. Salary £900.

NEWCASTLE-ON-TYNE, HOSPITAL FOR SICK CHILDREN.—Resident Medical Officer. Salary £100, with board, lodging, and laundry.

OXFORD, RADCLIFFE INFIRMARY.—House Physician, also Junior House Surgeon, both for six months and unmarried. Salary of former at rate of £80 and of latter at rate of £40 per annum.

PARISH OF ST. MARYLEBONE.—District Medical Officer. Salary £90 per annum.

PECKHAM HOUSE ASYLUM, London, S.E.—Senior Assistant Medical Officer. Salary £200.

PENDLEBURY, MANCHESTER CHILDREN'S HOSPITAL.—Junior Resident Medical Officer, unmarried, for six months, eligible for election as Senior Medical Officer for another six months. Salary at rate of £80 a year when Junior, and £100 a year as Senior, with board and lodging. Also Physician. Also Surgeon. Honorarium £100 each per annum.

RAMSGATE GENERAL HOSPITAL AND THE RAMSGATE AND ST. LAWRENCE DISPENSARY.—Resident Medical Officer, unmarried. Salary £100 per annum, with apartments, board, and attendance.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board and lodging.

STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon for six months. Honorarium of £41, with board, residence, and laundry.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

STRAITS SETTLEMENTS, MUNICIPALITY OF THE TOWN OF SINGAPORE.—Assistant Municipal Health Officer. Salary £400 per annum, rising to £450.

TYNEMOUTH, COUNTY BOROUGH OF.—Medical Officer of Health. Salary £300 per annum, increasing to £400.

UNIVERSITY COLLEGE, London.—Special Officer in charge of the Ear and Throat Department.

WALLINGFORD, BERKSHIRE ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £140, with board, apartments, attendance, &c.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and laundry provided.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Assistant House Physician and Assistant House Surgeon for six months. Honorarium at rate of £75 per annum, with board, lodging, and washing.

Births, Marriages, and Deaths.

BIRTHS.

ACKERLEY.—On August 16th, at Croft House, Surbiton, the wife of Richard Ackerley, M.B., of a daughter.

HEARN.—On August 20th, at Elmdene, Southbury-road, Enfield, the wife of R. S. F. Hearn, M.R.C.S., L.R.C.P., of a daughter.

LAWSON.—At Sherwood, East Sheen, S.W., on August 21st, the wife of Fredk. J. Lawson, M.B. Lond.—a daughter.

RUSSELL.—On August 17th, at Osman House, Fortis-green, N., the wife of J. Dill Russell, M.B., B.S. Lond., F.R.C.S. Eng., of a daughter.

WILSON.—On August 16th, at Marden Ash, Ongar, the wife of Geoffrey R. Wilson, M.A., M.B., B.C. Cantab., of a daughter (stillborn).

MARRIAGES.

CALEY—GREEN.—On the 17th August, at All Saints Church, East Budleigh, Devon, by the father of the bride, assisted by Rev. H. Bickersteth Ottley, M.A., Henry Albert Caley, M.D., F.R.C.P., of 24, Upper Berkeley-street, W., to Dorothy, second daughter of Rev. W. F. Green, M.A., vicar of East Budleigh.

PORTER—SMITH.—On August 19th, at Christ Church, Chelsea, S.W., by the Rev. J. C. Howell, B.A. (cousin of the bridegroom), assisted by the Rev. C. P. Waldo, M.A., Charles Robertson Porter, M.R.C.S. Eng., L.R.C.P. Lond., late of the London Hospital, eldest surviving son of Wm. MacNish Porter, of Northaw, Potters Bar, to Margaret (Marjorie), fourth daughter of Samuel Smith, of Cootehill, co. Cavan, Ireland.

DEATHS.

HARRISON.—On the 19th instant, at Brough, Westmorland, Jonathan Atkinson Harrison, M.D., J.P., of Hazelwood, Haslingden, Lancashire.

SHARP.—On August 9th, at Trevone, Edward Sharp, M.R.C.S., L.R.C.P., of Truro, aged 69.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE JUDGMENT OF CORONERS' JURIES.

AN inquest which was held at Scarborough on August 16th by the borough coroner on the body of a child, aged four months, presents some points of interest, as it has been reported to us. The evidence of the mother was to the effect that the child was in good health on the night of August 14th. At a quarter past four on the morning of August 15th she put the child to the breast and it immediately afterwards died. A midwife stated that there were signs of convulsions. The evidence of the medical man showed that he did not attend until some hours after he had been requested to see the child. He was unable to certify the cause of death though the condition of the nares pointed to hæmorrhage. The coroner left it to the jury to say whether a post-mortem examination was necessary and they returned a verdict of death from natural causes. A juror having expressed dissatisfaction with the medical man, he not having seen the child until ten hours after he was called, the coroner pointed out that the reason of the delay was explained by the fact that the medical man had been informed that the child was already dead. We think that a coroner should himself decide whether or not a post-mortem examination should be held instead of leaving the matter to the jury, and we think that jurymen should not be too ready to censure medical men whenever the opportunity presents itself to them. There are many reasons why a medical man may not at once attend a patient when he is called, though his wish to render aid where needed may be beyond question. He may have another engagement of a more pressing nature; the urgency of a case may not be made clear to him; he himself may be indisposed; or again, he may decline to attend a call without first receiving his fee for reasons which in his judgment are cogent. In the present case it is obvious that, the patient being, in the medical man's belief, already dead, no good could have resulted from an immediate visit. In nearly every case, as in the present one, when an accusation of non-attendance is made against a medical man investigation shows that the accusers have their minds fixed upon one particular case and are blind to the many, very many, calls upon medical service.

THE TREATMENT OF MEDICAL MEN AT HARROGATE BATHS.

To the Editors of THE LANCET.

SIRS,—I shall be obliged if I may be allowed to make some comment on the letter which appeared in THE LANCET of August 19th on this subject, for, as it happened, on that very day I applied, as I have done on some previous occasions, for a complimentary ticket. I was asked if I was in the active pursuit of my profession, and on my replying in the affirmative I was at once given what I asked for; and I would like to say that neither by the present manager nor by his two predecessors have I ever been treated with anything but the utmost courtesy and politeness. The giving of these tickets partakes somewhat of the nature of a give-and-take arrangement, the corporation expecting in return for the privilege that doctors will say a good word for Harrogate to their patients, but your correspondent, while evidently quite content to take, had nothing to give.

He may, as he says, have served his country with some distinction, but as he withholds his name we have no means of judging for ourselves; but this much the general public should know, that a man who has retired from the Indian Medical Service with the rank of lieutenant-colonel does so with a pension of several hundreds per annum, and with this knowledge I feel pretty sure the general opinion will be that his request was an unreasonable one.

I am, Sirs, yours faithfully,

J. E. BROOKS, J.P., M.R.C.S. Eng., &c.

Colwyn Bay, N. Wales, August 22nd, 1905.

To the Editors of THE LANCET.

SIRS,—I feel bound to ask you to insert a line in reply to a letter under the above heading in your issue of August 19th. Hearing that as a medical man I could obtain treatment without payment I called upon the manager of the baths, who in the most courteous way asked me to get an introduction from any of the local doctors who knew me to be in active practice. Having obtained this I was without any hesitation given a pass for six baths and unlimited drinking. The manager also kindly showed me the various baths and methods of treatment. This gentleman's courtesy was so marked that I feel sure that your correspondent's complaints must have arisen from offended *amour propre*. The municipality to which the baths belong is, of course, responsible for the greater strictness recently imported into the arrangements and it seems to me that ethically they are right. An army surgeon who has spent 27 years in the service of his country (not without remuneration), and who retires on a good pension, is in a very different position from an ordinary civil doctor who has to work very hard to make a livelihood and at the end of 27 years has often been able to lay little or nothing by. A pensioned Government official, although he happens to be a medical man, is, I think, no more entitled to gratuitous baths, treatment, or medical attendance than any other

person in receipt of a regular and certain income. It really resolves itself into a question of *quid pro quo*. The retired army surgeon has probably little or no opportunity of sending the corporation customers and therefore can hardly expect the consideration given to a man in practice who is sendin patients for treatment year by year.

Whilst writing I should like to add a word in praise of the very excellent arrangements at Harrogate, which compare most favourably with many foreign spas. I believe if English medical men knew how well everything is done here they would frequently be spared the offence to their patriotic souls caused by sending patients abroad.

I am, Sirs, yours faithfully,

Harrogate, August 23rd, 1905. M.D., M.R.C.P. LOND.

REGISTERED!

THE following leaflet has been sent to us by a correspondent, to whom it was handed as he was walking down a street in Edinburgh. Our correspondent says, "I have never seen anything to equal it," and although we have a wide experience of quack literature we are inclined to agree with him. Dr. M'Guire in his modest estimation of himself reminds us of Gilbert's hero who "was the bravest man in France. He said so and he ought to know."

A QUESTION WHICH IS OCCUPYING THE MINDS OF THE PEOPLE.

Why do people suffer, when their first visit to Dr. M'GUIRE will relieve them and the second visit permanently cure them? In cases pronounced INCURABLE, come and consult Dr. M'Guire, who will cure you without fail though your disease be of fifty years' standing; he has never disappointed a patient during his long practice of forty years. Having such long experience and having seen and treated the very worst cases successfully, leaves him no doubt as to his own ability. Thousands of people who are well and happy to-day owe it to Dr. M'Guire's careful attention and successful treatment.

Come at once and consult Dr. M'Guire, specialist in certain diseases, who will understand your complaint without asking you a question. A doctor is of no use to his patient if he has to ask, what is the matter with you? and, where is your pain?

The following are a few of the diseases which Dr. M'Guire has made a special study, and failing in curing would be impossible:—Nervousness (from whatever cause arising), Premature Decay, Kidney and Liver Complaints, Bright's Disease, Loss of Energy, Loss of Memory, Indigestion, Rheumatics, General Debility; Skin Disease cured in seven days; Cancer cured without ever using the lance. All complaints of a confidential nature cured in from three to five days. If not convenient to call, write and state the nature of your complaint. Dr. M'Guire has cured hundreds of people by correspondence. Medicine carefully packed and sent by boat or rail to any address.

Please note the Address:—

Dr. M'GUIRE, Surgeon (Registered)

12, BROUGHTON STREET,

(Corner of York Place, Edinburgh).

Hours—10 a.m. till 9 p.m.

It is the word "registered" which M'Guire has affixed to his name which has earned for him this advertisement. The Medical Acts do not often prove of any use against quackery but there is a definite penalty for falsely pretending to be a registered person. From the wording of the leaflet it may, we suppose, be taken for granted that M'Guire is not registered, and we commend him to the General Medical Council as a proper person for prosecution.

RAILWAY COMPANIES' LIABILITY.

To the Editors of THE LANCET.

SIRS,—Three weeks since I handed the Lancashire and Yorkshire Railway a package containing two bottles of medicine to be sent to Bradford. Inside was the bill—3s. 6d. for each, or 7s. in all. The guard broke the bottles in his van. The company admit liability but will only pay the intrinsic value, as they call it, which they say may be only a few pence. Is this right or can I claim the 7s.? The medicine was potassium iodide and would cost only a few pence, but that is not the point. I am, Sirs, yours faithfully,

August 23rd, 1905. M.D.

*** In our opinion the company cannot be expected to pay more than what is termed the "intrinsic value," though some pretty arguing might arise in discussing the point. A medical man does not charge a patient the cost price of drugs, but that is because the patient pays for the advice that led to the mixture as well as for the mixture. A railway company would have grounds to resist a claim for the payment of medical advice. —ED. L.

"KASTILIS."

WITH reference to our analytical notice last week of this preparation of "monoborate" we may add that the advantage of employing "monoborate" incorporated with soap is that whereas common borax, in spite of its alkaline reaction, is not completely compatible with soap, owing to the separation of fatty acids, the neutralised salt, that is monoborate, is perfectly so.

"SACCO."

WE have had an interview with a representative of Messrs. Stevens and Co., the proprietors of "Sacco," who convinced us of his good faith but not of the value of his secret remedy. He also showed us letters from two medical men who had been using "Sacco" without knowing its composition; the commendations of the medical men suffered in value from the short time over which their experience extended. We have also received from Messrs. Stevens and Co. a long letter for publication in which they protest against our attitude and words and assert strongly their own good faith. We are not publishing the communication, because to do so would entail upon us the necessity of contradicting certain of the statements.

MEDICAL WITNESSES AT CORONERS' INQUESTS.

To the Editors of THE LANCET.

SIRS,—With reference to your reply to "S. J." in THE LANCET of August 5th, p. 420, is it not doubtful if a workhouse infirmary is classed under the Coroners Act as a "public hospital, infirmary, or other medical institution"? I have recently been refused a fee by the coroner for attending an inquest and making a post-mortem examination upon an inmate of the workhouse infirmary of which I am deputy visiting medical officer, the appointment being held by my partner.

I am, Sirs yours faithfully.

August 21st, 1905. J. S. R.

PREMATURE BALDNESS.

To the Editors of THE LANCET.

SIRS,—I notice in THE LANCET of August 19th, p. 570, a letter inviting suggestions as to the management of Premature Baldness. The following method I have found simple and useful in regard to local treatment: Keep the hair cut short, wash the head every morning thoroughly with one drachm of iral in a pint of warm water, using no soap but a soft sponge; let it dry; and after rub well into all the scalp the following pomade: unguentum boracic, half an ounce; unguentum calycilic, half an ounce; and lanolin, three drachms. Then take a clean soft diaper and rub the head all over thoroughly till the impression of greasiness is removed. It will, I think, soon be found to remove the itching and scratching that often attends these cases, and if the hair follicles are not too extensively diseased already greatly to encourage the growth of hair. I am, Sirs, yours faithfully,

August 21st, 1905. X.

"INFAMOUS CONDUCT."

To the Editors of THE LANCET.

SIRS,—In reply to the letter of "Inquirer" in THE LANCET of August 19th, p. 570, asking what constitutes "infamous conduct" in a professional sense, I may say that the haziness which he notes as existing amongst junior practitioners is but a reflection of that which exists in the General Medical Council. It would be easy to define and to tabulate offences which have at one time or another been pronounced "infamous conduct" by the General Medical Council. Unfortunately, a decision arrived at in one case is but a slight guide as to what will happen in a similar case on another occasion. It is the extreme uncertainty of the disciplinary action of the General Medical Council that makes "infamous conduct" as prevalent as it is.

I am, Sirs, yours faithfully,

August 21st, 1905. AN EXPERT.

THE PREVENTION OF TUBERCULOSIS IN TRINIDAD.

IT is satisfactory to find that in Trinidad an enlightened policy is being followed with respect to tuberculous diseases and that the Trinidad Association for the Prevention and Treatment of Tuberculosis is issuing leaflets for the instruction of the public in elementary hygiene. The objects of this association are (1) to disseminate information regarding the prevention of tuberculosis; (2) to establish in the town of Port-of-Spain a dispensary for the gratuitous treatment of tuberculous disease of the lungs; and (3) to establish a sanatorium for consumption. The Hon. Dr. J. A. de Wolf and Dr. G. H. Masson are respectively chairman and secretary of the executive committee of the association.

COMMUNICATIONS not noticed in our present issue will receive attention in our NEXT.

METEOROLOGICAL READINGS.

(Taken daily at noon by Steward's Instruments.)

THE LANCET Office, August 24th, 1905.

Date.	Barometer reduced to Sea Level and 32° F	Direction of Wind	Rainfall.	Solar Radia in Vacuo.	Maximum Temp Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Aug. 18	29·85	S.W.		104	72	60	61	64	Raining
,, 19	29·89	W.	0·03	124	72	56	56	62	Fine
,, 20	29·79	S.W.	0·15	114	70	56	59	61	Cloudy
,, 21	30·03	S.		127	73	56	57	63	Fine
,, 22	29·82	S.W.	0·02	121	72	59	59	62	Cloudy
,, 23	29·72	W.	0·18	112	66	52	54	59	Cloudy
,, 24	29·91	S.W.	...	117	67	50	53	57	Fine

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (28th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.).

TUESDAY (29th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (30th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (31st).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.). Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.).

FRIDAY (1st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.). Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (2nd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (28th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Medical Cases.

TUESDAY (29th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.). 5 P.M. Dr. Ball: Common Symptoms of Throat, Nose, and Ear Diseases.

WEDNESDAY (30th).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Aphasia.

THURSDAY (31st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith road, W.).—4 P.M. Mr. Armour: Surgical Cases.

FRIDAY (1st).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Abraham: Cases of Skin Disease.

EDITORIAL NOTICES.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1905, which was completed with the issue of June 24th, and the Title-page to the Volume, were given in THE LANCET of July 1st.

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